QUANTIFICATION OF THE INVESTMENT RISK

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Introduction

The publication of Harry Markowitz' article "Portfolio Selection"[1] in 1952 paved the way for a quantitative revolution in the fields of security valuation and modern portfolio theory. In this pioneering article which contained the salient features of his book, **Portfolio Selection**[2], Markowitz developed a general solution for the portfolio selection problem. The writings by Tobin,[3] Hicks,[4] Treynor,[5] Sharpe,[6] Lintner,[7] Fama,[8] etc. ushered in a new era of research and a new and rigorous approach to financial investment under conditions of risk. The purpose of this article is to cover some elements of this quantitative revolution and to provide a quantitative measure of the investment risk factor.

Measuring Total Risk

Variability of returns is the most commonly used and the most widely accepted measure of total risk. "The academic community is almost uniform in the view that risk is measured by variability in rate of return, which they express in such statistical terms as standard deviation, variance, semivariance and so on."[9] Robert Levy defines risk in terms of rate of return. One characteristic which gauges uncertainty in quantitative terms is the variability of returns. Available evidence indicates that common stock investors demand and receive a higher level of return with increased variability, thus suggesting that variability and risk are related, if not synonymous.[10] Since the rate of return on a portfolio is a critical characteristic of the portfolio, risk can be thought of as the uncertainty about what that rate of return will be in the future.[11]

In order to clarify this important concept of variability, let us consider stocks A and B in Table1. They both promise an expected rate of return of 10%. However, stock A exhibits a larger degree of variability (spread) around its expected value than stock B. Accordingly, we are less certain about our actual return on A than on B. It is this greater uncertainty about A's future outcome that makes it riskier than B.

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Using total variability in return as a total risk surrogate renders risk quantification possible. This is because variability is a statistically measurable concept. One possible measure of variability is the range of the probability distribution of returns, Comparison of the ranges of returns of stock A and B shows that the potential gain (or loss) associated with A is greater than the potential gain (or loss) associated with B. While the rate of return on stock A ranges between –20% and +40%, the rate of return on B is limited within a relatively narrower range of –5% to +25% as shown in Table I.

TABLE I

State of Nature	P_i	R_i	$E(R)$	$R_i - E(R)$	$[R_i - E(R)]^2$	$P_i[R_i - E(R)]^2$
			STOCK A			
1	.1	.40	.1	.30	.0900	.0090
2	.2	.25	.1	.15	.1225	.0045
3	.4	.10	.1			
4	.2	–.05	.1	–.15	.0225	.0045
5	.1	–.20	.1	–.30	.0900	.0090
	1.00					.0270
			STOCK B			
1	.1	.25	.1	.15	.0225	.00225
2	.2	.20	.1	.10	.0100	.00200
3	.4	.10	.1			
4	.2	.00	.1	–.10	.0100	.00200
5	.1	–.05	.1	–.15	.0225	.00225
	1.00					.00850

		Stock A	Stock B
1.	$E(R) = \sum_{i=1}^{5} P_i R_i$	10%	10%
2.	$\sigma^2 = \sum_{i=1}^{5} P_i[R_i - E(R)]^2$	.027	.0085
3.	$\sigma =$	16.4%	9.2%

Even though the range is somewhat revealing, it has not been widely accepted as a measure of total risk because it is influenced by the extreme values in the data. For instance, if most of A's rates of return cluster around its expected value and only one or two rates are extremely high or low, they will influence our estimate of total risk.

The most commonly used measure of total variability is variance or its off-spring, the standard deviation. Some studies have at one time or another advocated the use of the semivariance, the semistandard deviation and the mean absolute deviation as measures of risk; but this has not reduced the popularity of variance as a measure of total risk.

Table I calculates (1) the expected value, (2) the variance and (3) the standard deviation for each of our two hypothetical stocks. While A's expected rate of return is identical to B's its variance and standard deviation are significantly greater than those of stock B. The message communicated to the financial analyst is simply that stock A is riskier than stock B. His uncertainty about A's future rate of return is significantly greater than that about B's.

The implication of the above discussion is quite obvious. Both return and risk must be considered when selecting individual securities for inclusion in a portfolio. In other words, in selecting individual stocks for his portfolio, the investor cannot simply rank these stocks on the basis of their expected rates of return and then pick up the stock with the highest rate. Such a selection approach will always result in one-stock portfolios. Concentration of investment funds in a single asset is contrary to the assumption of risk-aversion. Actually investors invest in more than one security. That is, **diversification**, rather than concentration, is the predominant mode of investment behavior. Through diversification, investors aim to avoid some of the total risk inherent in single assets.

To illustrate the need for considering both risk and return in security selection, let us assume that we are asked to pick the most attractive stock of the four stock candidates shown in Table II. On the basis of returns alone, it is clear that stock 1 is the most attractive since it yields the highest expected rate of return. A closer examination of the data, however, reveals that we have

two classes of risk. The first class includes stocks 1 and 2; the second includes stocks 3 and 4. Within the first class, stock 1 is clearly superior to stock 2. It promises a higher return for the same amount of risk (14% vs. 12%). By the same token, stock 3 is more attractive than 4.

TABLE II

	Return and Risk for 4 Hypothetical Stocks	
Stock	Expected Return $E(R_i)$,%	Total Risk σ,%
1	14	10
2	12	10
3	10	6
4	8	6

Figure 1 tells the same story graphically. Each of the four stocks is represented by a point in a risk-return plane. As shown in the diagram, stocks 1 and 2 belong to one risk class; stocks 3 and 4 to another. Within each risk class the choice is quite obvious. We should select stock 1 from the first class and stock 3 from the second. They are dominant in their respective classes; they offer higher returns for the same amount of risk exposure.

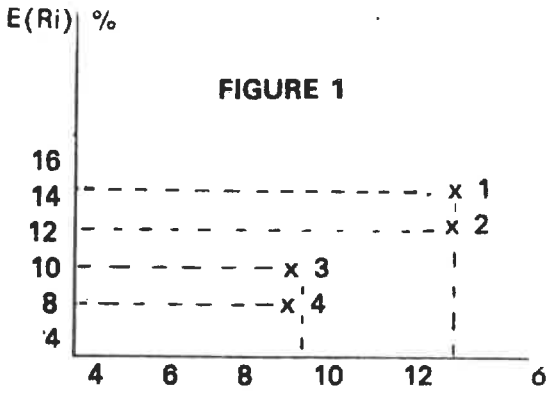


FIGURE 1

The result of this type of screening is, of course, the elimination of **dominated** stocks, i.e. stocks 2 and 4. This leaves us with stocks 1 and 3. Of these two stocks, which one would you choose? At first glance, we may select stock 1 since it promises

a higher return. But aren't we ignoring the risk factor? While 1 promises a higher yield than 3, it is also associated with a higher level of risk. So what we need is a screening device which takes both risk and return into account. One such device is the so-called Coefficient of Variation (CV) which expresses a security's total risk (σ_i) as a percentage of its expected return, $E(R_i)$. Mathematically, the coefficient of variation may be expressed as:

$$CV = \frac{\sigma_i}{E(R_i)}$$

It gives the amount of risk per unit of expected rate of return. For our purpose, however, it is more useful to inverse the relationship and express the expected return on a security as a percentage of its standard deviation. For the ith security this relationship may be written as:

$$Y_i = \frac{E(R_i)}{\sigma_i}$$

where Y_i denotes the size of return per unit of risk. And the higher the value of Y_i the higher the yield (rate of return) per unit of risk or the higher the price of risk.

Now it is not difficult to utilize Y as a ranking or screening device. From a list of stock candidates, rational investors will prefer those with higher Y's. Stocks with low Y values are said to be dominated (or inefficient) since they promise lower returns per unit of risk.

Applying this Y-concept to stocks 1 and 3, we can readily opt for stock 3 as it offers a higher return per unit of risk than stock 1 ($Y3 = 1.7 > Y1 = 1.4$). Table III ranks our four hypothetical stocks in terms of Y. According to this selection criterion, stock 3 is the most attractive followed by stocks 1, 4 and 2 respectively.

TABLE III

Stock	Four Hypothetical Stocks Ranked in Terms of their Yield Per Unit of Risk		
	Expected Return E(Ri), %	Total Risk σ_i	Return/Risk Yi
3	10	6	1.70
1	14	10	1.40
4	8	6	1.30
2	12	10	1.20

Partition of Total Risk

Total variability (risk) may be an acceptable measure of a security risk if the typical investor actually invests in and holds a single asset. The fact is that the typical investor, because of his aversion to risk, spreads his investment funds among several assets. In other words, he holds portfolios of securities rather than a single security. This kind of behavior warrants a modification in our measurement of risk. Selection from a large number of stock candidates should not depend on each stock's contribution to the risk of its portfolio. This is so because a portion of total risk, i.e., the unsystematic portion, is diversifiable and may cancel out as a result of diverdification. Consequently, in a well-diversified portfolio, only the systematic portion of risk remains.

According to Sharpe, total variance of returns on a particular common stock may be viewed as the sum of two types of variance:

1) systematic (market) variance: due to fluctuations in the general market, and
2) unsystematic (residual) variance: due to fluctuations unique to the stock in question.

Algebraically,

Total Risk = systematic + unsystematic risk
= market risk + residual risk
= market variance + residual variance

In order to partition total risk into its market and residual components we will utilize Sharpe's diagonal model. By expressing the stock's rate of return as a linear function of the market's rate of return, we can segregate the market influence from the residual influence. Such a relationship may be expressed as:

$$R_{it} = a_i + B_i R_{mt} + e_{it}$$

where,

R_{it} = the rate of return on the ith stock in period t

R_{mt} = the rate of return on the market portfolio in period t

a_i = a risk-free return

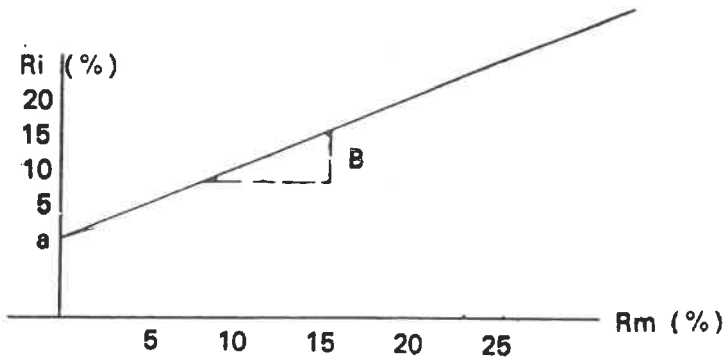
B_i = the market risk

e_i = a return peculiar to security i

For individual securities, the residual component (e_i) is the most important determinant of R_i. For well-diversified portfolios, on the other hand, the $B_i R_m$ component is the most important determinant of R_p (the rate of return on the portfolio).

Based on the historical returns – weekly, monthly or quarterly – on stock i and on the market, measured by a specific index, we can estimate the values of the parameters a_i and B_i. Given these estimates, we can easily draw the so-called **characteristic line** (Figure II). This line describes the **average** relationship between the return on the stock and that on the market.

Figure II



If the characteristic line passes through all the points in the scatter diagram, we can conclude that the correlation between the stock's rate of return and that of the market is perfect, i.e., changes in R_m fully explain variations in the R_i. In such a case, market swings are the sole determinant of stock returns. If, on the other hand, the regression line passes through some but not all the points, then the correlation between R_i and R_m is less than perfect. This implies that factors other than market fluctuations influence the behavior of stock i returns. It is the segregation and measurement of these market and nonmarket (residual) factors that we are really after. To accomplish that, however, we must first set forth some definitions and statistical relationships:

$$\text{Total Risk} = V(R_{it}) = \Sigma(R_{it} - \bar{R}_i)^2 = \sigma_i^2 \quad (1)$$

$$\text{Systematic Risk} = \Sigma(\hat{R}_i - \bar{R}_i)^2 = B_i^2 \sigma_m^2 \quad (12) \quad (2)$$

$$\text{Unsystematic Risk} = \Sigma(R_{it} - R_i)^2 = \Sigma(e_{it})^2 = \sigma_{i.m}^2 \quad (3)$$

where:

$\hat{R}_i$ = the predicted value of R_i

$\bar{R}_i$ = the average value of R_i

$\sigma_{i.m}$ = the standard error of estimate

Grouping the terms in 1, 2 and 3 above, we obtain

$$\sigma_{i^2} = B_i^2 \sigma_m^2 + \sigma_{i.m}^2 \quad (4)$$

Dividing both sides of equation 4 by σ_i^2

$$1 = \frac{B_i^2 \sigma_m^2}{\sigma_i^2} + \frac{\sigma_{i.m}^2}{\sigma_i^2} \quad (5)$$

A closer examination of equation 5 reveals that the first ratio – on the right hand side – gives the proportion of total variance in return that is explained by the market; the second ratio gives the proportion left unexplained or explained by the residual factors. In statistics, R^2 – the coefficient of determination – is usually used to measure the proportion of variance in the dependent variable that can be explained by the independent variable. Applying this concept to our regression model above, we can set

$$R^2 = \frac{B_i^2 \sigma_m^2}{\sigma_i^2} = \frac{\Sigma(\hat{R}_i - \bar{R}_i)^2}{\Sigma(R_{it} - \bar{R}_i)^2}$$

where the numerator measures the variance of the **predicted** values of R_i and the denominiator measures the variance of the **actual** values of R_i

If R^2, the coefficient of determination, gives the proportion of total risk that is explained by the market factor, it follows that its complement $(1-R^2)$ gives the proportion of total risk that is explained by residual factors:

$$1 - R^2 = \frac{\sigma_{i.m}^2}{\sigma_i^2} = \frac{\sum (R_{it} - \hat{R}_i)^2}{\sum (R_{it} - \bar{R}_i)^2}$$

It should be noted that the higher the value of R^2, the greater the influence of market swings on the stock performance. An R^2 equal to +1 indicates that (1) systematic risk equals total risk and that (2) nonsystematic risk equals zero. An R^2 equal to zero, on the other hand, implies that fluctuations in the ith stock returns are totally determined by residual factors. That is, market fluctuations have no influence on this stock.

According to equation 4:

$$\text{Systematic Risk} = B_i^2 \sigma_m^2$$
$$= B_i^2 V(R_m)$$

But since market variance is common to all securities, systematic risk may be approximated by B_i^2 or simply B_i. It is this "beta coefficient" that has been widely used as an **index** or **surrogate** of market risk.

In order to understand the meanings and attributes of alpha and beta more fully, let us take another look at Figure II. Alpha (a_i) gives the return on the stock in the absence of any changes in the market. It is, as a result, indicative of the importance of nonmarket factors. For instance, consider two stocks which have identical betas but different alphas; one has a positive aplha; the other a negative alpha. It may be said that the underlying fundamentals of the positive-alpha stock are more attractive than those of the negative-alpha stock. Unlike the latter, the positive-alpha stock has the tendency to rise even in a neutral market. However, security alphas are unstable and usually lack statistical significance. Consequently, security alphas are often overlooked.

Beta (Bi) on the other hand, gives the slope of the security's characteristic line. It simply measures the volatility (sensitivity) of the stock relative to the general market. The higher the beta of a given security, the more sensitive it is relative to the market and vice versa. For instance, a stock with beta equal to 1 tends

to move in line with the market. If the market's rate of return goes up by 10%, the stock will, on the average, go up by 10%. A beta higher than 1 indicates that the stock is relatively risky or **aggressive**. It amplifies the market action both ways; on the way up and on the way down. For example, if B = 2.0, then a 10% rise in R_m will be accompanied by a 20% advance in R_i. On the way down, the stock will tumble 20% for a 10% fall in the market. A third variety of stocks are those with betas less than unity (i.e., public utility stocks). Such stocks are characterized as safe or **defensive**. They are least responsive to market movements. A stock with a B = 0.5 will not match the changes in market returns. If, for instance, R_m goes up or down by 10%, R_i tends to go up or down 5% only. In other words, such stocks "demagnify" the market action in the rally and the decline. A rare variety of securities are those which move counter to the market, i.e. securities with negative betas such as gold stocks. Such stocks seem to "march to the beat of a different drummer"[13] Of 4,357 beta estimates, Blume reports only 7 or 0.16% are negative Nearly every stock appears to move with the market.[14]

To summarize, the beta coefficient is an **index** of market risk. It measures the volatility of a security's return relative to the market. The higher the beta, the higher the market risk and vice versa. According to beta theorists, securities may be classified on the basis of their betas:

1) Agressive: $B_i > 1$

2) Defensive: $B_i < 1$

Generally, the value of beta ranges between less than 0.5 and over 2.5. High betas are generally characteristic of rapidly growing companies, companies manufacturing capital goods and companies employing high operating and financial leverages. High residual risk, on the other hand, tends to be larger for companies in which technological changes in products or processes are taking place very rapidly. It also tends to be larger for one-product firms, firms for which style is an important factor or firms whose fortunes depend on a single key executive.[15]

Estimation of Alpha and Beta:

The coefficients of **alpha** and **beta** determine the security's characteristic line. Alpha gives the line's intercept; beta gives its slope. In order to generate reasonably accurate estimates of alpha and beta, the analyst must rely on historical data for R_i and R_m First, he must decide on the length of his study period. A study period that is too short may not include a sufficient amount of information and hence, may not yield reasonably accurate results. On the other hand, a study period that goes too far into the past may comprise increasingly obsolete and irrelevant data. Quality and availability of data may in the end determine the appropriate study period in a given situation. Having decided on the study period, the analyst's second step is to divide it into subperiods and then compute the rate of return on both the security in question and the market index for each subperiod. The rate of return may be calculated utilizing the following familiar formulas:

$$R_i = \frac{D_t + P_{i_{t+1}} - P_{i_t}}{P_{i_t}} \qquad \text{for the security}$$

$$R_m = \frac{D_{m_t} + P_{m_{t+1}} - P_{m_t}}{P_{i_t}} \qquad \text{for the market}$$

The type of market index employed hinges upon the type of stock being studied. If the analyst is interested in measuring the volatility of an industrial stock, he may use an "industrial" market index. If he is interested in the volatility of a utility stock, then the appropriate market index may very well be a utility index.

A "Beta" Product

The simplicity of beta, its intuitive appeal and its ease of calculation have all played a role in its mass production. By 1970, a number of U.S. brokerage firms and investment houses were ready to manufacture and market a product called "beta".

Beta estimates depend, of course, on the type of data used in their calculations. Length of study period, number of sub-

periods, recency of data, and the type of market index used all tend to influence the magnitude of beta. For instance, betas based on a 20 year period may change rather slowly as the underlying data is updated to take into account newly available information. In contrast, betas based on one or two years are likely to reflect the effect of new data much more quickly.

The number of intervals – observations – used in deriving beta is another factor that is likely to influence its value. A 5-year period divided into weekly subperiods may yield different betas from that yielded using monthly or quarterly intervals.

Recency of information may also influence beta. The problem here is one of weights, i.e., how to weigh old and new data. If, for instance, the stock's volatility is relatively stable, recent and nonrecent data may be weighted equally. If, however, the stock is characterized by rapidly changing volatility, recent data should probably be accorded more weight than non-recent data. As we reach further into the distant past, the data becomes increasingly obsolete and irrelevant to the present and the future.

Stationarity of Beta

A major attraction of beta is its utility as an index of systematic risk for individual securities. However, beta is an **ex-post** estimate of risk. It is usually derived from historical data. Furthermore, it is an **estimate** of the true beta and, therefore, as any other estimate, is subject to measurement errors.

Even if we are assured that the beta of a given security is an accurate and unbiased estimate of its true beta, it will still be of little value unless it provides us with a reliable guide to **future** risk. As investors, we are concerned with **future** not **past** risk. As a result, we would like to know whether the beta of a given security is sufficiently stable over time to warrant its usage as a predictor of future market risk.

Robert A. Levy has conducted tests on the short-run stationarity (predictability) of security betas. His conclusion is that security betas are not highly stable.[16] Such lack of predictability however, is not as serious as it may seem at first. This is because investors typically hold portfolios of securities rather than single securities. And, thanks to the law of large numbers, betas of large well-diversified portfolios are much more predictable. A

portfolio is simply a composite of individual securities. Its beta is, therefore, the average of the betas of its component securities. Normally, "it is easier to predict the average (i.e., portfolio beta) than the value of any single component (i.e., a given security's beta)."[17] The beta estimates of some component securities may be biased upward, those of others may be biased downward. For large enough portfolios, such upward and downward biases tend to cancel out resulting in a portfolio beta that is relatively unbiased, stationary and predictable. Thus, for practical purposes, the manager of a well-diversified portfolio can act as if the betas of individual securities are stable over time.

Summary

In constructing his stock portfolio, the investor must first go through a process of screening individual stocks from a large stock population. For each stock candidate, he must secure two basic estimates: (1) an estimate of the stock's expected rate of return and (2) an estimate of the level of risk associated with that particular stock.

In a previous article[18] we furnished the reader with a quantitative approach for measuring the true rate of return for a given security or portfolio. In this article, we go one step further and provide him with a quantitative method for measuring (a) total risk and (b) market risk for a given stock. We use "total variability" in returns as a "total risk" surrogate and "beta" as an index of market risk. A security beta measures the volatility of its return relative to the market. From the point of view of the portfolio manager, market risk is the most important, if not the only, risk component that he has to cope with. This is so because other sources of risk tend to cancel out when we construct well-diversified portfolios.

In addition to the above, the article provides the reader with a method of estimating beta and the various factors that may influence the accuracy of this estimate. Finally, we consider the question of beta stability'. Individual security betas are not highly stable. This does not, however, deal a serious blow to the beta concept as investors typically hold portfolios of stocks rather than single stocks. Betas of large well-diver sified portfolios are much more stable and, hence, are quite predictable over time.

FOOT NOTES

(1) Harry M. Markowitz, "Portfolio Selection", **Journal of Finance,** VII, NO.1 (March, 1952), 77-91.

(2) Markowitz, **Portfolio Selection, Efficient Diversification of Investments** (New York: John Wiley and Sons, Inc., 1959). Reprinted by Yale University Press, 1970.

(3) James Tobin, "Liquidity Preference as Behavior Towards Risk" **Review of Economic Studies, XXV**, No. 67 (February, 1958), 65-87.

(4) J.R. Hicks, "Liquidity," **The Economic Journal, XXII** (December, 1962), 787-802.

(5) Jack Treynor, "How to Rate Management of investment Funds", **Harvard Business Review** (January-February, 1965), pp.63-75; also "Risk Estimates," **Financial Analysts Journal** (September-October, 1968), pp. 93-100.

(6) William F. Sharpe, "A Simplified Model for Portfolio Analysis," **Management Science, IX,** No.2 (January, 1963), 277-293; see also "Capital Asset Prices; A Theory of Market Equilibrium Under Conditions of Risk," **Journal of Finance, XIX,** No.3 (September, 1964), 425-442; also his book, **Portfolio Theory and Capital Markets** (New York: McGraw-Fill Book Co., 1970); also "Diversification and Portfolio Risk," **Financial Analysts Journal** (January-February 1972), 74-79.

(7) John Lintner, "Security Prices, Risk, and Maximal Gains from Diversification", **Journal of Finance** (December, 1965), pp.587-615.

(8) Eugene F. Fama, "Risk, Return, and Equilibrium: Some Clarifying Comments", **Journal of Finance, XXIII,** No.1 (March, 1968), 29-40.

(9) Frank E. Block, "Elements of Portfolio Construction," **Financial Analysts Journal** (May-June, 1969), p.123.

(10) Robert A. Levy, "On the Short-Term Stationarity of Beta Coefficients," **Financial Analysts Journal** (November-December, 1971). p.55.

(11) J. Peter Williamson, **Investments: New Analysts Techniques** (New York: Praeger Publishers, 1971), p.26.

(12) (a) $R_i = a + BR_m$

$$\Sigma R_i = Na + B\Sigma R_m$$

Dividing both sides by N (No. of observations), we have

$$\frac{\Sigma R_i}{N} = \frac{Na}{N} + \frac{B\Sigma R_m}{N}$$

$$\bar{R}_i = a + B\bar{R}_m$$

$$a = \bar{R}_i - B\bar{R}_m$$

(b) $\hat{R}_i = a + BR_m$ from the regression line

Subtracting $\bar{R}_i$ from both sides of the quation, we get

$$\hat{R}_i - \bar{R}_i = a + BR_m - \bar{R}_i,$$

Squaring both sides,

$$(\hat{R}_i - \bar{R}_i)^2 = (a + BR_m - \bar{R}_i)^2$$

Summing up both sides

$$\Sigma(\hat{R}_i - \bar{R}_i)^2 = \Sigma(a + BR_m - \bar{R}_i)^2$$

but $a = R_i - BR_m$ as shown in part (a) above

Substituting for a

$$\Sigma(\hat{R}_i - \bar{R}_i)^2 = \Sigma(\bar{R}_i - B\bar{R}_m + BR_m - \bar{R}_i)^2$$

$$= \Sigma(BR_m - B\bar{R}_m)^2$$

$$= \Sigma B^2(R_m - \bar{R}_m)^2$$

$$= B \cdot \Sigma(R_m - \bar{R}_m)^2$$

But $\Sigma(R_m - \bar{R}_m)^2 = V(R_m) = \sigma_m^2$

Therefore,

$$\Sigma(\hat{R}_i - \bar{R}_i) = B^2\sigma_m^2$$

(13) Vartanig G. Vartan, "Gold Issues Show Trend in Reverse," Spotlight: **New York Times** (May 4, 1969).

(14) Marshall E. Blume, "On the Assessment of Risk," **Journal of Finance, XXVI**, No. 1 (March 1971), 6.

(15) Jack, L. Treynor et al, "Using Portfolio Composition to Estimate Risk" **Financial Analysts Journal** (September-October, 1968), p.94.

(16) Levy, p.62.

(17) William F. Sharpe and Guy M. Cooper, "Risk-Return Classes of New York Stock Exchange Common Stocks, 1931-1967" **Financial Analysts Journal** (March-April, 1972), op,52.

(18) A,D. Issa, "Ingredients of Common Stock Valuation," **Journal of Social Science** ((May 1975), pp.151-168.

URBANIZATION TRENDS IN THE ARAB WORLD

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This Paper is presented at the Conference on "Problems of of Development" organized by the Organization for the Promotion of Social Sciences in the Middle East in Cooperation with tion with Ford Foundation-held in Khartoum Republic iof Sudan Feb. 16-19, 1976.

INTRODUCTION

In the past two decades considerable attention has been given to the basic issues related to urbanization in the Arab world. Social scientists as well as city planners have concerned themselves with the phenomenon of rapid migration from rural to urban areas and the numerous problems that have resulted from it. The League of Arab States[1] as well as the Organization of Arab Cities[2] and more recently the Organization for the Promotion of Social Sciences in the Middle East, have promoted research, seminars and workshops treating various aspects of urbanization The United Nations has been a valuable resource in providing statistical data pertaining to demographic characteristics and patterns of development in the countries of the region. Although accurate demographic statistical data on the Arab states have not yet been collected, available figures and data will serve the purpose of deriving certain generalizations and identifying trends in population mobility, urban development and socio-economic planning. Systematic research by social scientists on urbanization and the problems facing Arab cities is scarce and urgently needed.

The Arab City is at the crossroads between its past, present and future. Its past is bound by a varied cultural, religious and historical heritage. While the present stretches between 15-50 years, the rapid development has been in all directions. Present development is influenced by international trends in urban development. In certain aspects it has not been concomitant with Arab society and culture nor with environmental realities.

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The objective of this paper is to discuss present trends in the urbanization of Arab countries based on demographic data, and to explain the underlying factors affecting the urbanization process. The paper will then attempt to provide a brief statement about the pattern of future growth.

In order to discuss the main features of urbanization in Arab countries, it is relevant to review the concept of urbanization as a process.

THE URBANIZATION PROCESS

Some scientists feel that in the underdeveloped countries the Western experience in urbanization is being repeated[3] hence the application of a theoretical model focusing on Western trends. (To what extent this could apply to urbanization in the Arab states will be discussed later).

According to social scientists, it is possible to delineate three main facets of the urbanization process. The first is demographic, the second, economic and the third, social.[4] The demographic aspect of the urbanization process is twofold: roughly speaking, cities in the Arab World began to grow rapidly after the second World War and the total proportion of population resident in cities increased compared to that resident in rural areas.[5] Davis explains this growth in three ways:

(a) because of population growth, settlements classified as rural are reclassified as urban.
(b) through an excess of births over deaths '(natural increase) and
(c) because people have moved from non-urban to urban areas.

He concludes that the shift of population from rural to urban areas is the principal component of population growth. He adds that in order to understand why this rural-urban migration occurred, one must evaluate the economic facets of the urbanization process. The major economic feature of the process was the shift from agriculture to non-agricultural occupations.[6]

The second group of theories used a model of economic growth based on analysis of the urbanization process. In the Capitalist World, two broad processes have been associated

with economic development: (a) a structural change in occupations occurred whereby the agricultural labour force shifted to manufacturing, services, or tertiary occupations, and (b) a process or urbanization occurred when the population shifted from the rural to the urban sector.[7]

The third group of theories are concerned with the supposedly positive role of the city in inducing social change. In this context some considered the city to be the centre of social change, introducing new social patterns and breaking down the old, traditional patterns, while others argued that new social patterns in the city had begun to spread outward to the rural areas.The third group of theories argued that cities, as significant social sub-systems were reflected in specific features of personal behavior.

Applying these groups of theoritical concepts to the urbanization process in the Arab states, requires a more detailed qualitative and quantitative analysis of economic and social process. These forces vary in their degree of relative importance to the urbanization processes in the Arab states. For example, in the case of the bil producing countries, an economic factor, oil, stands out as a main force for the achievement of rapid urbanization. Other factors, however, such as strategy, defence, political expediency, religious climate and the like cannot be discounted. It is useful, therefore, to look at the city as a set of administrative, trading, industrial and socio-cultural sub-systems in the overall national system.[8]

The need still remains for a meaningful and adequate set of models of urbanization relevant and applicable to the Arab countries either as an entity or in terms of regions e.g., North Africa, the Middle East, and the Gulf States. It will be the task of Arab social scientists, academic institutions and associations to plan for research towards this end.

WORLD URBANIZATION [9]

The potential development of cities of any size actually began in the nineteenth century as the result of the industrial revolution, the increase in agricultural surplus, improved transportation, political security and the advancement of technology. In the year 1800, out of the 900 million people in the world 1.7 per cent

lived in cities of 100,000 and more, and 2.4 per cent lived in cities of 20,000 and more, while 3 per cent lived in cities of 5,000 and more. During a span of 150 years, world population as well as urban population increased as follows:

TABLE I

Total World Population and World Urban Population 1800-1960

Year	Total World Population (millions)	Population in Cities of 20,000 and more (millions)	%	Population in Cities of 100,000 and more (millions)	%
1800	906	21.7	2.4	15.6	1.7
1850	1.171	50.4	2.3	15.6	2.3
1900	1,608	146.9	9.2	88.6	5.5
1950	2,400	502.2	20.9	313.7	13.1
1960	2,962	803.2	27.1	590.0	19.9

Source: Wilbert Moore and N. Smelser, (Edit.) Urbanization in Newly Developing Countries, Gerald Breeze, Opp. Cited p.19.

The table indicates that while world population increased more than three times in the period 1800-1960, the population living in localities of 20,000 or more inhabitants increased over 40 times. Also, the population living in localities of more than 100,000 inhabitants represent 19.9 per cent of total population

In 1960 the population in large cities, (100,000 and more inhabitants) was distributed in major continental regions as follows:

Asia –12.3, per cent, Europe –29.6, Africa –8.1, America –42.0,–Oceania 43.3[11]

Comparing the percentage of population considered urban (living in cities of 20,000 and more) in some regions of the world, the Arab countries rate above average for Asia and Africa. In Anglo-American countries, 72 per cent of the population were urbanized in 1970, in Europe, 65 per cent; Latin America, 40 per cent; Asia, 25 per cent, Africa, 15 per cent and the Arab World,

35 per cent. The Arab World is urbanizing at a faster pace than the rest of the world. While the world as a whole is urbanizing 4 to 4.5 per cent[12] per annum, the rate for the Arab World, is 4.5 to 5.5 per cent per annum. However, it should be noted that urbanization in Arab countries is uneven and varies from one region to another and from one state to another.

URBANIZATION IN THE ARAB WORLD:

In 1973, the Arab world had over 137,850,000 inhabitants. About 42 per cent of this total lived in towns and cities of 20,000 or more, with a total population equalling about 58 million. The average Arab population is increasing at an annual rate of about 2.8 per cent. Urban population growth is twice as great as total annual growth.

In order to evaluate the urban growth of the Arab countries, it will be relevant to view the population growth during a decade. Table 2 shows the distribution of population in the Arab states between the years 1964 and 1973.

The table shows population trends in the Arab states between the years 1964 and 1973. Total population has increased about 30,520,000 persons at a varying annual rate of increase. Egypt scores the highest volume of population increase annually, close to three quarters of a million, while Algeria registered nearly half a million increase each year.

The present total population is 137,850,000 persons, and if it continues to increase at the same rate, it is likely that by the year 2000 the population will be doubled or close to 250 million persons. The question is, are the Arab countries increasing annually at the same rate, or is there a variation? And if there is, in what respect, and in which country or groups of countries.

The following table shows other population characteristics in the Arab world, namely, size of population, the annual rate of increase as well as the area of each country with such a density.

TABLE 2

POPULATION OF ARAB STATES FROM 1964 TO 1973

(In Millions)

	1964	1965	1966	1967	1970	1971	1972	1973
Algiers	11.68	11.92	12.66	13.08	14.33	14.77	15.27	15.77
Egypt	28.66	29.33	30.14	30.91	33.33	34.08	34.84	35.62
Libya	1.56	1.62	1.68	1.74	1.94	2.01	2.08	2.16
Mauritania	1.01	1.03	1.06	1.08	1.16	1.19	1.22	1.26
Morocco	12.96	13.32	13.73	14.14	15.52	15.38	15.85	16.31
Soumal	2.45	2.50	2.56	2.61	2.79	2.86	2.94	3.00
Sudan	13.33	13.73	14.12	14.50	15.70	16.09	16.40	16.90
Tunisia	4.52	4.62	4.72	4.82	5.13	5.23	5.33	5.51
Bahrain	0.17	0.18	0.18	0.19	0.22	0.22	0.22	0.23
Iraq	7.80	8.05	8.31	8.50	9.44	9.75	10.07	10.41
Jordan	1.88	1.95	2.01	2.08	2.31	2.38	2.47	2.56
Kuwait	0.43	0.48	0.52	0.57	0.75	0.79	0.84	0.88
Lebanon	2.34	2.41	2.47	2.55	2.79	2.87	2.96	3.06
Oman	0.55	0.57	0.58	0.60	0.66	0.68	0.70	0.72
Qatar	0.06	0.07	0.07	0.07	0.08	0.08	0.08	0.09
Saudi Arabia	6.58	6.75	6.93	7.12	7.74	7.97	8.20	8.44
Syria	5.12	5.30	5.48	5.66	6.26	6.46	6.67	6.89
UAE	0.16	0.17	0.17	0.18	0.19	0.20	0.20	0.21
Yemen	4.87	5.13	5.25	5.37	5.77	5.91	6.06	6.27
S. Yemen	1.20	1.24	1.28	1.32	1.44	1.47	1.51	1.56
	107.33		113.92		127.55		134.00	
		110.43		117.17		130.39		137.85

Source:. United Nations Demographic Year Book 1973. p.101-107.

TABLE 3

POPULATION IN ARAB STATES, ANNUAL RATE OF INCREASE, AREA AND DENSITY 1966-1973

State	Per Capita Income 1973 (US Dollars)	Population in millions	Annual Rate of Increase Per Cent	Area Km. sq. (1000)	Density 1973
Algiers	450	15.7	3.2	2.381	7
Egypt	220	35.6	2.2	1.001	36
Libya	2340	2.1	3.7	1.759	1
Mauritania	140	1.2	2.7	1.030	1
Morocco	270	16.3	–	446	37
Sudan	130	16.9	2.5	2.505	7
Tunisia	250	5.5	2.4	162	34
Bahrain	550	0.22	1.8	622	365
Iraq	430	10.4	3.3	434.	24
Jordan	310	2.5	3.4	97	26
Kuwait	4950	0.88	5.8	17.8	50
Lebanon	590	3.00	3.1	10	294
Oman	350	0.72	3.2	212	3
Qatar	1730	0.086	2.9	11	8
Saudi Arabia	790	8.4	4.9	2149	4
Syria	290	6.8	3.3	185	37
Emirates	2390	0.2	2.7	83	2
Yemen	80	6.2	3.0	195	–
South Yemen	120	1.5	2.7	287	5

Source: United Nations Demographic Year Book, 1973 pp.82-100.

* Based on figures published in the Encyclopaedia Britanica 1975.

The table shows that there is a wide disparity among the Arab states with respect to annual rates of increase, area and density. The lowest rate of increase is recorded for Bahrain (1.8 per cent). while the highest for its neighbouring state, Kuwait (5.8 per cent) Factors contributing to this condition can be attributed to in and out migration respectively since cultural economic political and other conditions may be similar. Next to Kuwait Saudi Arabia has the second highest rate of increase (4.9 per cent) which can be attributed also to an imported foreign labour force and immigration from neighbouring countries.

The countries which had a rate of increase above the 3.0 per cent level include: Libya, Algeria, Iraq, Jordan, Lebanon, Oman, Syria and North Yemen. As for those who have below 3.0 per cent level they include Egypt, Mauritania, Sudan Tunisia, Qatar, United Arab Emirates and South Yemen.

As for per capita income, there is evidence of remarkable differences among the Arab states. Those countries with a per capita income below three hundred dollars include: Egypt, Mauritania, Morocco, Tunisia, Sudan, Iraq, Jordan, Oman, Syria, North and South Yemen. As for those with a per capita income ranging above 300 and below 800 dollars, the following countries are included: Algeria, Iraq, Bahrain, Jordan, Lebanon, Saudi Arabia. In the upper **per capita** bracket, above 800 dollars, the countries included are: Kuwait, Libya, United Arab Emirates and Qatar.

The table indicates that in the span of 23 years urban population has increased from 17,800,000 persons, representing 25 per cent of total population, to 47,600,000 persons, representing 36.8 percent. The rate of increase has varied in the same interval between one country and another. It reached as high as 37 per cent in the United Arab Emirates, 32 per cent in Kuwait, and as low as 7 per cent in the case of the Sudan.

With respect to density, the majority of Arab countries have very low rates; 9 countries below 10 persons per square Km and 7 countries between 11 and 50. Only two recorded above 200, namely Bahrain and Lebanon (365 and 294 persons per square Km respectively). It is obvious the throughout the region, the spatial distribution of the population is uneven. Nearly 99 per cent of the people earn their livelihood from about one fifth of the land area, the rest being either desert or arid mountainous zones. The density will markedly differ when population distribution is considered according to land suitable for living and livelihood. This applies perhaps to one fifth of the total area in the Arab World.

Having given an overview of the demographic characteristics of the Arab countries, it is important that we examine population characteristics in the urban areas of the Arab world.

TABLE 4

POPULATION IN URBAN AREAS IN THE ARAB WORLD 1950-1973

Country	Population 1950	1973	Urban[1] (in millions) 1950 No.	%	1973 No.	%
Algeria	8.9	15.7	2.2	(25)	7.9	(50)
Egypt	20.5	35.6	6.5	(32)	15.6	(44)
Libya	1.1	2.1	0.2	(22)	.5	(29)
Mauritania	0.7	1.2	0.01	(2)	0.06	(8)
Morocco	9.0	16.3	2.0	(23)	6.0	(37)
Sudan	10.0	16.9	0.6	(6)	2.1	(13)
Tunisia	3.6	6.5	1.1	(31)	2.5	(46)
Bahrain	0.1	0.2	0.09	(71)	0.17	(78)
Iraq	5.2	10.4	1.8	(35)	6.3	(61)
Jordan	1.3	2.5	0.5	(35)	1.1	(43)
Kuwait	0.2	0.8	0.1	(51)	0.6	(83)
Lebanon	1.8	3.0	0.5	(40)	1.9	(64)
Muscat & Oman	0.5	0.7	0.01	(03)	0.07	(09)
Qatar	0.02	0.09	0.01	(50)	0.09	(75)
Saudi Arabia	5.3	8.4	0.5	(09)	2.4	(29)
Syria	3.4	6.8	1.2	(35)	2.9	(44)
Emirates	0.08	0.2	0.02	(25)	0.1	(62)
Yemen (N)	4.0	6.2	0.08	(2)	0.8	(13)
Yemen (S)	0.7	1.5	0.1	(9)	0.6	(40)
Total	75.4	130.5	17.8	(25)	47.6	(36.8)

Source: Kingsley Davis: World Urbanization 1950-1970. Vol.I Berkeley: University of Calif. Press (1969) pp.113-130 (As appeared in United Nations Bulletin No.7 July 1974) Article by S. Irbahim entitled Urbanization in the Arab World. 1973 statistics were compiled from the Demographic year Book, United Nations 1973.

If the countries of the region could be grouped for analysis and purposes of comparison to low, middle and high urbanization [13] using the following scale:

Low urbanization	25 or less percent urban
Middle urbanization	from 26 to 49 per cent urban
High urbanization	from 50 and more percent urbanization

then the countries in relevant categories will be:

(a) **Low Level Urbanization: Mauritania,(8), Sudan (13), Muscat and Oman(9), Yemen North(13)**

These countries are characterized by low per capita income mainly agricultural economic structures are less industrialized, and have high illiteracy rates.

(b) **Middle Level Urbanization: Egypt(44), Jordan(43), Syria (44) Yemen-South (40), Tunisia (46).**

Morocco(37), Saudi Arabia(29), and Libya(29).

These countries, by and large, are witnessing more rapid urbanization due to industrialization and migration from rural areas due to various economic and cultural factors. Per-capita income in these countries is, on the average, higher than in the low level urbanized countries.

(c) **High Level Urbanization: Kuwait(83), Bahrain(78), Qatar(75), United Arab Emirates(62), Iraq(61), Lebanon(64), and Algeria(50).**

All of these countries are oil producing countries, with the exception of Lebanon, and have experienced rapid urban growth following the marketing of oil in commercial quantities. Such revenues assisted the expansion of infrastructures; industrialization, services, commerce and other aspects of urban development, (e.g., health transportation, communication, etc.) These countries are characterized by a relatively higher per capita income and high rates of annual urban growth.

The third group of countries are characterized by low population density, and relatively high rate of population increase.

THE PRIMATE CITY IN THE ARAB WORLD:

A city is a primate city when it is surpassingly llarger than all the other urban centers in the nation[15] According to Hoselitz, major national functions concentrate in these cities at a very early stage in their development and as a result they: swallow up investment, (2) absorb man-power, (3) dominate the cultural pattern, (4) have an adverse effect on the development of other cities and (5) tend to have a high consumption rate compared to production rate.[16]

As for characteristics and conditions which contribute to the formation and development of primate cities, Brian Berry indicates that primate cities are likely to be characteristic of (1) countries which until recent times were politically or economically dependent on other countries, (2) small countries which once had extensive uninhabited areas or (3) countries where the economics of scale is such as not to require cities of intermediate sizes.[17]

There have been attempts by demographers and social scientists to develop tools to measure urban dominance. For example, the "Rank-Size-Rule" is a gradual hierarchy applied to the urban centers of a country in order to arrange an urban classification. When applied to Arab cities, it was found that in most of them, the biggest city has disproportionately outdistanced the second largest. Another measurement tool is the "Index of Primacy" or the "Four City Index" (FCI. The Index divides the population of the biggest city in the country by the combined population of the next three. Mathematically, the minimum value of FCI must exceed 0.33, but this is not a necessary maximum value. In practice, the FCI seldom falls below 0.50 or seldom rises above 8.00.[18]

Applying this tool on the Arab cities, it was found that most of the primate cities grew at a much faster pace than the next three cities combined in the Arab countries e.g., Algeria, Egypt, Iraq, Lebanon, and Saudi Arabia.[19]

In order to evaluate the Arab countries, with respect to primate cities, it is relevant to identify, in each country, those cities whose population was 100.000 and more persons. This figure is used for international comparative measurement of

urban growth. The following table shows the number of cities in each of the Arab countries listed with a population of 100.000 or more persons and per cent of the total country population in addition to per cent of total urban population.

TABLE 5

Population of Major Cities in Relation to Total Country Population and All Urban Population in 1970

City	20 Population (100,000)	21 Of total country population (per cent)	Of total urban pop. (per cent)
ALGERIA			
Algiers	12.0	8.2	32.5
Annaba	2.1	1.5	4.0
Constantine	3.2	2.3	6.1
Orna	3.7	2.7	7.1
EGYPT			
Cairo	49.6	15.0	34.4
Alexandria	20.0	.6	14.2
El-Mahalla	2.5	.7	1.7
Port Said	3.1	.9	2.1
Suez	3.1	.9	2 1
Shurba El Kema	2.5	.7	0.7
Giza	7.1	2.1	4.8
Aswan	1.2	.3	.8
Asyout	1.5	.4	1.0
Damanhour	1.4	.4	.9
Fayoum	1.5	.3	1.0
Ismailia	1.6	.5	1.1
Mansura	2.1	.6	1.4
Tanta	2.5	.7	1.7
Zaqazik	1.7	.5	1.1
MAURITANIA			
Nouakchott	0.5	.4	1.6

MOROCCO			
Casablanca	15.6	10.0	28.3
Fez	3.8	2.4	6.9
Kenitra	3.0	2.0	5.4
Marrakesh	3.9	2.5	7.0
Meknas	3.6	2.3	6.5
Oujda	3.1	2.0	5.4
Rabat	5.3	3.4	9.6
Safi	1.9	1.2	3.4
Tanjiers	1.8	1.1	3.3
Tetowan	2.7	1.7	4.9
SOMALIA			
Magadiscio	2.3	8.2	46.0
SUDAN			
Khartoum	2.6	1.6	20.0
Khartoum North	1.2	.7	19.0
Omudurman	2.5	1.5	9.2
Port Sudan	1.1	.6	9.0
TUNISIA			
Sfax	2.5	5.0	11.9
Tunis	6.4	13.0	30.4
BAHRAIN			
Manama	0.8	32.0	40.0
IRAQ			
Baghdad	23.1	25.3	47.7
Basra	4.3	4.7	10.7
Hilla	1.5	1.6	3.7
Karkouk	2.5	2.7	6.2
Mousel	3.6	3.9	9.0
Najaf	1.8	1.9	4.5
JORDAN			
Irbid	1.6	6.6	16.0
Zarka	2.2	9.1	22.0
KUWAIT [22]			
Kuwait City	2.1	24.7	35.0
Hawalli	4.1	48.3	60.2

LEBANON			
Beirut	9.3	32.0	71.5
SAUDI ARABIA			
Jeddah	2.6	3.5	13.6
Mecca	2.5	3.3	13.1
Riyadh	2.9	3.9	15.2
SYRIA			
Damascus	9.2	15.0	40.0
Aleppo	6.3	10.3	27.3
Homs	2.1	3.4	9.1
Hama	1.3	2.1	5.6
Lattakia	1.2	1.9	5.2
UNITED ARAB EMIRATES			
Abu Dhabi	0.5	5.0	70.0
YEMEN N.			
Sana	1.2	24.0	40.0
YEMEN S.			
Aden	2.5	25.0	83.3

The Table indicates the following:

1. The largest five cities per 100,000 population in the Arab states are: Cairo(49.6), Baghdad(23.1). Alexandria(20.0), Casablanca(15.6), and Algiers(12.0). The remaining cities range between (0.5) and (9.2),being Abu Dhabi and Beirut respectively.
2. The total number of cities in the Arab states with 100.000 and more persons by 1970 is 59 (excluding two, Manama and Abu Dhabi, Their population is below this level, but they represent the biggest cities in their respective countries).
3. The order of countries with the largest number of cities in the range mentioned are, in order: Egypt(15) Morocco (10), Iraq (6), Syria (5), Algeria and Sudan (4), Saudi Arabia and Jordan (3) Kuwait (2) and the rest (one city).

4. The population of the largest city in each of the five countries mentioned above constitutes the largest percentage of urban population in that country. This supports the notion that the urbanization process is characterized by the presence of a primate city which demographically dominates the rest of the cities. This situation however, has its advantages when considering the concentration of population and the impact such a concentration creates on transportation, housing, health, education, and recreational services. The great efforts and attention by central governments being allocated to meet growing demands created by rapid urbanization will be at the expense of an urban development that is well-balanced between large, medium and small cities and allowing for rural and bedouin localities.

5. The total number of cities in the Arab world whose population number 100.000 or more represents 9.4 per cent of the total number of cities in the world and 13.6 per cent of the cities in Asia. The number of cities of the same size in different continents is as follows:

Africa	62 cities
North America	136
Soth America	82
Asia	431
Oceania [23]	12
The Arab World	59

In the coming quarter of a century, it is expected that the number of large cities will increase as the middle size town will continue to grow at the rates indicated earlier, ranging from 2 per cent to 18 per cent annually in the various Arab countries.

A question stands out: Are the Arab countries over-urbanized?

According to available census data, all the capital cities have experienced an annual rate of growth of over 4 per cent. This implies a doubling of the population every eighteen years, and in a number of these cities, the growth rate has exceeded 6 per cent per year, which means a doubling of the population every twelve years. The case of Kuwait and Manama cities, where growth has been at the rates of 18 percent and 15 per cent per

year respectively, are exceptional and are largely the result of large influxes of expatriates. [24]

Factors influencing growth in the Arab world:

The main factors that can be said to effect urban growth are the following: (a) natural increase, (b) industrialization and (c) urban migration.

a) Urbanization as a Result of Natural Increase

The vital processes of birth and death are fundamental to growth or, decline of human populations. Although nearly all Arab states draw their population increments largely from increase rather than from migration, cities are quite varied in this respect, some growing by virtue of their large natural increase and others by net inward migration[25]

TABLE 6

VITAL STATISTICS, RATE OF NATURAL INCREASE AND LIFE EXPECTANCY IN THE ARAB STATES BETWEEN 1965 and 1970

	Births		Deaths		Natural Incr. Per 1000	Life Expt. Years
	Absolute Per 1000	Fertility %	Absolute Per 1000	Infant %		
Algeria	49.1	173.2	16.9	86.3	32.2	50.7
Egypt(71)	34.8	150.3	13.1	103.3	21.7	52.7
Libya	45.9	–	15.8		30.1	52.1
Mauritania	44.4	173	22.7	187	21.7	41
Morocco	49.5	215.7	16.5	149	33	50.5
Somal	45.9	–	24.0	–	21.9	38.6
Sudan	48.9	243.3	18.4	93.6	30.5	47.6
Tunisia	46.3	131.2	16	125	30.3	51.7
Iraq	49.3	56.5	15.5	28.2	33.8	51.6
Jordan	49.1	118.5	16	36.3	33.1	52
Kuwait (73)	45.3	190	7.4	44.1	35.9	58.5
Lebanon(73)	24.5	–	4.3	13.6	20.2	–
Saudi Arabia	50.0	–	22.7	–	27.3	42
Syria	47.5	116.5	15.7	21.7	32.2	52.8
Yemen (N)	50	–	22.7	–	27.3	42.3
Yemen (S)	50	–	22.7	–	27.3	42.3

Source: United Nations Demographic Year Book, 1973 p.94-98.

Before identifying trends in natural increase in urban areas, it is imperative that statistics for the Arab world as a whole be indicated. The following table shows trends in vital statistics, rate of natural increase and life expectancy in the Arab countries during the interval from 1965-1970.

After religious affiliation and family values, the variable most strongly affecting fertility is place of residence – the city, the village or the desert. These differences are narrowing gradually in the twentieth century. Annual fertility and natural increase in the Arab world also remain high compared to the advanced countries. Urban birth rates tend to vary inversely with city size, they are lowest in metropolitan centers and highest in small towns. Differences also persist among neighbourhoods within a city especially those characterized by ecological differentiation [26] If distinct high fertility, racial, religios, national, or socio-economic groups live in separate districts, their neighbourhoods tend to have higher birth rates. Similarly, ethnic and other social groups having low fertility tend to depress natality rates in rates in areas they inhabit.

Statistics indicate the birth rate in the Arab world as a whole represents high scores compared with advanced and European countries. While death rates, in absolute number, tend to be low due to improvement in health services. infant mortality is high in the majority of Arab states. Life expectancy, on the other hand, tends to be rising during the past two decades. **Low level of the** expectancy (ranging from 30-39 years) is recorded for Somalia, **Medium level** (ranging from 40 to 49 years) is recorded for the Sudan, Saudi Arabia, North and South Yemen, and Mauritania, **Medium high level** (ranging from 50 to 59 years) is recorded for Egypt, Libya, Morocco, Tunisia, Iraq, Jordan, Syria, Algeria **High level** of life expectancy rate (ranging from 50 and above)is recorded only in Kuwait. In all Arab countries it has been possible to control the mortality rates by improving the qualitative and quantitative efficiency of health services, but it has been much more difficult to control fertility because of cultural, religious and political factors implicit in the social order in urban as well as rural communities.

In Arab cities, the urban-rural differentials in fertility are unlike those in the West where it is generally argued that urban

fertility is lower than rural fertility. In the Arab cities, the case of Cairo, Egypt may apply to several other cities. Studies indicates that urban and rural fertility patterns are substantially the same, and this situation has existed for some considerable time. Further evidence in this context is that Cairo, the largest urban area, is now growing substantially from natural increase at a rate almost one-third higher than that of the rural areas.[27] The relevance of this particular fact to the process of urbanization is of extreme significance.

It might be argued also that since the average urban rate of growth ranges between 3.0 to 6.0 per cent (and in Gulf States it reaches up to 16.0 per cent annually), then urban growth cannot be associated only with natural increase. Internal migration from desert and rural areas to cities as well as international migration tend to play an important role in urban growth.

b) Urbanization as a Result of Industrialization

The relationship between industrialization and urbanization in newly developing countries has been the subject of much research and extensive publication. Industrialization is likely to affect, in a very significant way, not only the rate of growth of particular urban areas but the type of growth, as well as the relative level of economic development involved in urbanization. The stages of industrial development also have relevance to urban development and growth. The early stages of industrialization may be characterized by a focus on the manufacturing of consumer goods, involving mostly light industrial operations. Later stages involving heavier industry are likely to be more directly related to location. They are also likely to attract manpower from rural areas as well as migrants from neighbouring countries.

The relationship between industrialization and urbanization is complicated by the fact that the timing in the rate of urbanization and the rate of industrialization are not always suitable, even if they proceed at the same time.

In spite of the growing concern expressed by Arab governments, industrialization is still in an early stage of development. This concern has lead to the establishment of industries such as ceramics, cement, glass, asbestos, steel-rolling, dairies and olive oil and vegetable canning in Iraq, Egypt, Jordan, Kuwait, Tunisia,

Lebanon and Saudi Arabia. In the petroleum producing countries, oil revenue forms a very substantial part of national income. Petro-chemical industries, situated near oil wells at the fringes of cities, are being developed and new settlements, towns for housing staff and labourers, are constantly growing. Another unresolved question remains that of whether the oil pipes should be extended from oil wells to cities or whether cities should be established near oil reserves.

The contribution of industry to national economy, in most Arab countries is small. The accounting for only 3-13 per cent of the national income in most of these states. [28]

In spite of the trend in Iraq, Syria and Algeria, Egypt towards adopting policies of industrial decentralization in most of these states, industrial growth in the Arab countries has tended to be centered in and at the fringes of capitals and large cities. In Iraq, 35 per cent of the 22,576 industrial establishments are in the Baghdad region. Similarly, the heaviest concentration of industries are to be found in Beirut, Cairo, Amman, Jeddah, Riyadh, Damascus and Kuwait. The industrial labour force is being drawn from rural areas, and in the case of the Gulf states, the labour force is largely expatriate, coming from other Arab countries. [29]

In the process of industrial development several factors come into play that affect urbanization e.g. location of raw materials, mobility of skilled and unskilled labour, exploitation of power and water, planning transport and communication systems, markets, and the establishment of the necessary infrastructures auxiliary to production. All this, inturn, brings about a need for housing. Consequently, the building and construction industries flourish and this attracts professional semi-skilled and unskilled labour, thus increasing the pressure on all types of services. Soon the metropolis becomes the center of an external economy i.e. it provides service industries such as banking, insurance, brokerage, packing and storage. The cities in the Arab world are primarily service centres offering employment opportunities-year round-to migrants from desert and village communities and those coming from beyond the national borders.

c) Urbanization and Rural-Bedouin Migration

Men search their environment for opportunities to achieve goals arising out of their current living conditions and recent past experience. The city provides spécial opportunities through its "opportunity structure" composed of four major "market sectors" i.e. the housing, employment, consumer goods and leisure activity. Opportunities are advertised through impersonal, bureaucratic, natural proximity and social network structures. As a consequence, man may accept opportunities which change his current living situation and goal orientation and this, in turn, effects his future search for opportunities.[30]

These assumptions apply to the migration process from rural to urban areas as well as from small urban to large urban communities. Rural migration is often attributed to causes such as population presure, lack of land and under-employment. There are also factors of a more personal kind such as dissatisfaction with a traditional environment.[31] Some are pulled to the city by relatives who are already there and by the promise of education and jobs; others leave because they aspire to achieve success in obtaining authority. In short, the motivations forcing the rural migrant to the city are many and they influence him greatly in his reaction to the city. In addition, the values and culture of the migrant and his ability to assimilate to the new life and environment are of no less importance.

There are several types of rural urban migration processes. One of them is planned-forced migration such as occurred in lower Egypt as result of the construction of the High Dam. Nuba villagers were moved from both sides of Lake Nasser to new villages and some settled in towns and cities. In the case of the Arab-Israeli Armstice line following the war in 1948, the line cut off farms from 99 villages. Their owners,considered as economic refugees, were forced to search for a livelihood in nearby cities and towns. In some places there is still a seasonal migration whereby farmers utilise their time between crops in mining industries and therefore seek temporary residence.[32] The migratory labour force, comprising nearly 3 million persons in Egypt flows from one province to another in search of employment in the newly reclamated lands in the Northern Delta, in Al-Tahrir and other provinces.[33]

The case of the forced migration of Arab Palestinian refugees, whereby about one million persons were forced to leave their homes and homeland as a result of Israeli aggression in 1947, resulted in the sudden congestion of towns and cities in Jordan, and several cities in Syria, Lebanon, Kuwait and the Gulf states. A great proportion of them live in camps and settlements in Jordan, Syria and Lebanon. They have been contributing to demographic change and urbanization in the countries of the region.

In Arab countries as a whole, push-factors such as the stagnation of rural life and pull-factors of urban attraction and employment opportunities operate to stimulate rural-urban migration. The rapid growth of Arab cities attests to this massive in-migration. For example, all fourteen provincial capitals in Iraq showed enormous growth between the census 1957-1965. The per centage change varied from 21.5 and 39 in Amora, and Kirkuk to 140.1 in Kerbala, 126.3 in Irbid and 102 in Baghdad [34] In Jordan, 40 per cent of the growth of population was due to migration from rural areas and small towns. In Saudi Arabia, the growth of the seven major cities of Riyadh, Mecca, Jeddah, Medina, Taif, Hafouf and Dammam has been mainly due to in-migration [35] Tripoli, in Libya following the revolution in 1969, and the rising opportunities in the city, attracted thousands of farm labourers to the city because of the lack of transportation facilities and low incomes from farming. The government has initiated projects such as the reclamation of land around Tripoli (The Green Hill area), whereby migrant farmers can work and eventually settle in newly constructed farm communities.

In the Gulf region, where agriculture is scarce, the discovery of oil resulted in urbanization. The Bedouins in southern Saudi Arabia found their way to the cities seeking naturalization, claiming rights and managing to settle in cities and around big towns. Although not fully integrated in the urbanization process, they still constitute a problem to the countries concerned with housing them. They currently live in shacks called "Ashish", and are waiting to benefit from government housing schemes for limited income groups. Non-nationals, who immigrated legally or illegally to the Gulf States dwell in the Ashish zones at the outskirts of cities. This is also the case in several other countries

such as Egypt, Algeria and Morocco.

Planning for Arab Cities

Planning urbanization in the Arab states should be based on the following:

a) Clear, definite, practical and attainable goals, objectives and targets for national, social and economic development based on local human and natural resources and in view of priority needs in the short term and in the long run.

b) Formulation of a population policy considering annual growth, density, distribution, mobility, migration from rural-bedouin areas as well as migration from neighbouring and foreign countries.

c) The presence of scholars and specialists. Better use can be made of Arab specialists who are the region or employed abroad. Future leaders, administrators, technicians, planners and supervisors in relevant fields should be trained to meet various urbanization problems.

d) Identification of urban problems, qualitatively and quantitatively (physical, social, cultural, economic, religious, recreational, educational, etc) and delimiting the factors contributing to be presence of such problems is of primary importance. Therefore, scientific social research, employing practical tools and methods for collecting and analysing data, is imperative to modern planning.

e) Encouraging the participation of various institutions e.g. the family, education, universities, the public and private sectors in various fields of activity in the process of urbanization at different phases or urban development. Such participation will make the responsibility rest on both the public and the private sectors and will ensure utilization of resources.

f) Urban planning should envisage the global approach to the problem of urban development and not remain limited to big towns and cities.

Having these consideration integrated in present and future policy formation concerning urban planning and development, it is relevant to discuss forms of action required for implementation of future urban policy in the Arab states.

Therefore, it is necessary to advise measures to be taken in the near future and others to be useful for the distant future.

1) Short term planning

Short term planning for urban development takes into consideration the following:

a- Population Increase

"It is the responsibility of each government to decide on its own policy and devise its own programmes of action dealing with the problems of population, economic and social progress.[36] Rate of population increase should not exceed rate of growth in **per capita** income.

There should be a decentralization of industrialization, providing for small towns and villages to decrease migration to big cities and providing improved standards of living and allowing for socio-economic progress throughout the country.

The following services should be provided:

(1) Protection of cities against various types of pollution from vehicles, industries, aeroplanes, trains, ships as well as sanitation, disposals, sewage, etc. in order to limit the damages which such pollution may cause to people and institutions.
(2) Protection for citizens and vital installations against air raids in times of war.
(3) Protection against fire and nuclear radiation.
(4) Protection of underground as well as surface waters from pollution especially those close to cities.
(5) Transportation, both public and private means, including roads, stops, stations, and adequate space, signals and seasonal maintenances.
(6) Low cost housing projects, middle-income housing schemes, planned neighbourhoods for large groups and private housing. A national policy for the planning of housing should begin with the clearing of slum areas, shanty towns, and the preservation of historical places and the maintenance of a national heritage.

b- Industrial Location.

There should be a close correlation between industrial location and population settlement. Industry attracts manpower and

manpower seek better employment opportunities and conditions. This affects the consumption distribution as well as allocation of resources for future development, thus alleviating pressures on primate cities and attaining a more equitable distribution of population and labour force.

c- Physical Planning

Plans for physical development should be considered along with national planning since the latter aims at the social economic and political development of the nation. Physical planning is important in achieving objectives and goals of development and tends to contribute to the solution of problems.

d- Legislation and Administration

There is a need to examine present legislation, since most present institutions are copies of foreign laws. These laws were often applied wrongly, and others do not meet the realities of Arab cities and cultures. Modern administrative techniques and decentralization of authorities and responsibilities contribute to the saving of time, energy and money.

2) Long Term Planning

In order for long term city planning to be realistic and effective, it must draw on the knowledge and experience of many specialists: demographers, sociologists, health specialists, physical planners, and economists to function as a team in conducting necessary research, investigating current problems and making projections for urbanization at the national level. The city is only one part of the country, and planning should treat the city as such. Planning for the city could not be isolated from national planning.

Every effort should be made to avoid **over-urbanization**, a situation which will occur in Arab cities, if they are left unplanned in their present trend of growth, This will result in the diversion of a great share of the nation's finance, manpower, and talent resources that might be used more productively elsewhere in the national economy.

Over-urbanization can only be solved in terms of sound well-balanced economic and social planning

Social, cultural and economic values should be considered in planning for future urbanization. We are all proud of our

heritage and value systems, and the question is whether such. heritage and value systems, and the question is whether such values and characteristics can be retained in the process of urbanization.

The urbanization process in Arab countries is also part of a universal trend, and it should be associated with international programmes and institutions concerned with various aspects of urban development. Cooperation and joint efforts should be encouraged to bring the Arab city close to the international scope of urban development.

More important is the strengthening of regional institutions such as the Organization of Arab Cities, the League of Arab States, and Arab universities teaching urban sociology and demography. These should evaluate their role in designing future plans and policies regarding long term planning.

There is a great need for further research to be under-taken by universities, research institutions, governmental and private sectors functioning as a team of experts representing relevant social and economic disciplines, to investigate various problems concerning future urbanization policies.

BIBLIOGRAPHY

1. Abu-Lughud J. "Urban-Rural Differences as a Function of Demographic Transition: Egyptian Data and an Analytical Model", American Journal of Sociology 69, 1964.
2. Al Tanawi S. "The Most Important Problems Facing Municipalities in the Arab World-Appropriate Solutions' **Organization of Arab Cities, Second Annual Conference,** 1970, Kuwait.
3. Berry, Brian "City Size Distribution and Economic Development in Economic Development and Cultural Change April 1955.
4. Davis Kingsly "The Urbanization of Human Population "in B. Gerland, **The City in Newly Developing Countries,** Prentice-Hall, 1970.
5. Davis Kingsly, **World Urbanization 0950-0970,** Vol.I, Berkeley: University of California Press, 1969.
6. Gottmann J. & Harper R. **Metropolis on the Move,** N.Y. John Wiley & Sons, Inc., 1967.
7. Hatt, P. & Reiss Al. **Cities and Society.** The Free Press of Glenco., U.S.A. 1951
8. Hanson R. et Al. "A Simulation Model of Urbanization Process" in Eugene B. Brody Edit. **Behavior in New Environments – Adaptation of Migrant .Population.** Sage Publications, Beverly Hill, Cali. 1970.
9. Hoselitz, "Urbanization and Economic Growth in Asia", in G. Breese, **The City in Newly Developing Countries** Prentice Hall, 1970.
10. Ibrahim S. "Urbanization in the Arab World; in the U.N. Bulletin No.7, July 1974.
11. McGee, T.G. **"The Urbanization Process in the Third World,** London, Bend and Son, 1969.
12. Planning Council; Department of Statistics, Census of 1970 Report, Kuwait.
13. Qutub I.; "Role of Migratory Workers in New Reclamated Land and Prospects of Literacy Programmes – a Case Study in North Al-Tahrir Province – Egypt, 1970. Sirs El-Layyan, Menoufia, ASFEC, Egypt.
14. Qutub I. Al-Tahador wa Numow Al-Modon Fi Al-Beland Al-Arabia (Arabic) **Urbanization and City Growth in Arab Countries,** Al-Mohtasseb Library, Amman, 1969.
15. Rizk H. "Population Policies, Scope, Goals, Means and Problems", in UN Population Bulletin No.7, 1974.
16. Ragheb Iris "Patterns of Urban Growth in the Middle East" in G, Gresse, **The City in Newly Developing Countries,** Prentice Hall Inc., Englewood, N.J. 1969.
17. Rumaihi M. Al-Betrol Wa Al-Taghyour Al-Egtimai, (Arabic) **Oil and Social Change in the Gulf States** Research and Studies Arabic Centre, Arab Organization for Education, Culture and Science 1975.
18. Thomlinson Ralph **"Urban Structure – The Social and Spatial Character of Cities,** Random House, N.Y. 1969.
19. Unesco; **Handbook for Social Research in Urban Areas,** 1967.
20. UNIDO; **A Comparative Analysis of Small Scale Industries in Arab Countries of the Middle West ID/WG. 07/3**
21. United Nations; Demographic Year Book 1973.

FOOTENOTES

1. The League of Arab States held a conference on Urbanization in Tripoli-Libya, 1972.
2. The Organization of Arab Cities, established in 1968 with current membership of 70 cities, held several Conferences, and Workshops on various aspects of urbanization problems and development.
3. Leonard Reissman, The Urban Process, Cities in Industrial Societies, Glenco, Ill., 1964, pp.167-8
4. These facets can be equated with Lampards' division of "... three conceptions urbanization in social sciences; the behavioural the structural and the demographic" – Eric Lampard – Historical Aspects or Urbanization in Philip Houzer et.al (Edit.) The Study of Urbanization, N.Y. 1965 p.519.
5. T.G. McGee. The Urbanization Process in the Third World, London, Bend and Sons, 1969, p.15-19.
6. Kingsly Davis, "The Urbanization of Human Population" in Gerald Breeze, the City in Newly Developing Countries, Prentice Hall.
7. T.G. McGee, Ibid p.21.
8. Gerald Breeze, Opp. Cited, p.112.
9. Urbanization.
10. M. Rumaihi, Oil and Social Change in Gulf Areas (Arabic) Research and Studies Institute, Egypt, 1975.
11. Ibid, p.20.
12. Saa-Eddin Ibrahim, Urbanization in the Arab World, United Nations Population Bulletin, No.7 July 1974, p.74.
13. Gerald Breeze, in his Book, Urbanization in Newly Developing Countries Classifies countries according to level of Urbanization as follows:
    (1) Low under 20 per cent of total population in places of 20,000 more inhabitants. (2) Medium low (between 20 and 29.9 per cent). (3) Medium high (30-39.9 per cent) and (4) High (40 per cent and over).
14. Urban Population – settlements with 20,000 or more inhabitants.
15. Gerald Breeze, Opp. Cited P.48.
16. Bert Hoselitz, "Urbanization and Economic Growth in Asia", as mentioned in G. Breeze, Ibid.
17. Brian Berry, "City Size Distribution and Economic Development", Economic Development and Cultural Change 3, (April 1955) p.55
18. S. Ibrahim, "Urbanization in the Aran World", United Nations Population Bulletin No.7 July 1974, p.82.
19. Ibid, p.83.
20. United Nations Demographic Year Book, 1973.
21. Kingsley Davis: Opp. Cited.
22. Kuwait Statistical Dept. Census of 1970. p.463-465.
23. United Nations Demographic Year Book, 1960 p.349-71.
24. United Nations, World Social Situation, Opp. cited p.80.
25. Ralph Thomlinson, Urban Structure – The Social and Spatial Character of Cities, Random House, New York, 1969, p.97.

26. Ralph Thomlinson, Opp. Cited p.98.
27. See the study of Januet Abu Lughod, "Urban-Rural Differences as a functio[illegible] of the Demographic Transition: Egyptian Data and an Analytical Model, "American Journal of Sociology 69, 1964 pp.476-90.
28. Unido–A comparative Analysis of S[illegible]all-Scale Industries in Arab Countries of the Middle East. ID/WG 17/3.
29. R. Hanson et.al. "A Simulation Model of Urbanization Process" in Eugene B. Brody Edit. Behavioral in New Environments Adaptation of Megrant Population. Sage Publications, Beverly Hill, Calif., 1970 pp.378.
30. R. Hanson et.al "A Simulation Model of Urbanization Process" in Eugene B. Brody Edit. Behaviour in New Environments Adaptation of Migrant Population. Sage Publications, Beverly Hill, Calif. 1970, p.378.
31. T.G. McGee, opp. cited p.54.
32. Gerald Breeze, Opp. Cited p.85.
33. Ishaq Qutub, Role of Migratory Workers in New Reclamated land and Prospects of Literacy prohrammes – a Study in North Al-Tahrir Province – Egypt", 1970 Sirs Ellayan, ASFEC, Egypt.
34. United Nations, World Social Situation, 1970 Report.
35. Kingdom of Saudi Arabia, An economic Report (Riyadh Central Planning Organization, Dec., 1965.
36. United Nations Resolution 1838 (XVII of 18 December, 1962. Population Growth and Economic Development.