

**Emerging Economies Access to Capital and Risk management Strategies:
A Case Study of Ashanti Goldfields Corporation**

by

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Submitted to the Sloan School of Management
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**EMERGING ECONOMIES ACCESS TO CAPITAL AND RISK MANAGEMENT
STRATEGIES: A CASE STUDY OF ASHANTI GOLDFIELDS CORPORATION**

by

VICTOR K. SOSAH

Submitted to the Sloan School of Management
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ABSTRACT

In the past three years, Ashanti has been transformed into sub-Saharan Africa's most successful mining company with over 32 million ounces of gold reserves and resources. This study examines two key drivers of Ashanti stocks : growth opportunities in African mineral resources and; the risks associated with operating in the region, to better understand how they contribute to valuation of Ashanti shares. The study shows that the ability of Ashanti to raise capital did not result from the capital market suddenly awaking to the potential in Africa, rather, Ashanti through its financial policies, in particular through the use of informationally insensitive financial instruments and close relations with banks who also monitor and approve investment activities, has been successfully able to access the capital market.

Thesis Supervisor: Donald Lessard
Title: Epoch Foundation Professor of International Management

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1.0 INTRODUCTION

For the last three decades, the flow of international capital to developing countries has been directed at the sovereign state primarily through the Bretton Woods institution of the World Bank. However, the beginning of the 1990s, saw a marked shift in policy away from servicing the sovereign state to servicing private institutions. This policy change has facilitated capital flow to Latin America and Asia in unprecedented proportions. For the most part Africa has seen only a tiny proportion of the aggregate sum, five percent¹ of FDI flow to developing countries. The reasons often cited include the lack of institutional factors; legal, financial, and regulatory frameworks, lack of economic infrastructure and the physical separation of the region from the nerve centre of economic activity - the US and Western Europe.

Against this background is set the remarkable story of the Ashanti Goldfields Corporation which has in the last two years gained access to the international capital markets by listing on the Australia, London, New York, Toronto and Zimbabwe Stock exchanges. With access to international capital, Ashanti has become a multinational African mining company with over 30 million ounces of gold reserves and resources. Ashanti has been effectively transformed from a state owned mining company into a multinational financial pipeline for investment in African mineral resources. In spite of this success, valuation of Ashanti returns is very low compared to its peer group.

This thesis examines two main drivers of Ashanti's stock valuation to better understand how they contribute to the share price.

1. growth opportunities for Ashanti in Africa. - To the extent that the value of a gold mine depends on future output and the current spot price discounted at risk free rate, Ashanti's present value depends on the size of its reserve and resources.
2. the market's view of risks associated with operating mines in Africa. - To the extent that Ashanti's assets are concentrated in the region, how does the market evaluate the risk associated with operating in the region.

¹ United Nations Conference on Trade and Development, *World Investment Directory*: Vol V; Africa

Next, I discuss Ashanti's financial and risk management strategies to assess how they affect its activities in Africa given the two key elements that drive its valuation.

Ashanti presents a good case study for companies in Africa because although its valuation has remained low compared to its peer group of North American growth firms, it has been able to raise substantial capital for investment. It has been able to achieve this through its financial policies, particularly the use of informationally insensitive financial instruments and close relations with banks who also monitor and approve investment activities, has been able to raise capital from the market. Given the financial policies at Ashanti are consistent with that of a growth company and they also take into account the risks in Africa, I am led to conclude that the low valuation of Ashanti shares are related to operational credibility. The other main component of Ashanti that I did not examine.

The study is organised in six parts. Chapter 2 presents an overview of the Ashanti Goldfields Corporation and describes some of its business activities in Africa. Chapter 3 presents the growth strategy of Ashanti in Africa. Chapter 4 presents an empirical study of country risk analysis, assessing the impact of events on stock returns. Chapter 5 describes Ashanti's financing policy taken from the pecking order theory : internal funding, debt and equity in that order of capital budgeting for growth. Chapter 6, provides a study of the hedging strategy for commodity risk management and how it integrate the financial policy to mitigate country risk. The final chapter, provides the salient financial policies for a growth company in Africa.

2.0 THE ASHANTI GOLDFIELDS CORPORATION

In 1897, an English company named Ashanti Goldfields Corporation Limited was founded to develop a mining concession in the area of Obuasi (Location in Ghana is Exhibit 1). Several years later underground mining began at the site and has continued to the present. In 1969, AGCL became a wholly owned subsidiary of Lonrho, a UK listed company with interests in mining, hotels and general trade in Africa. Later that year, the Government of Ghana acquired 20 percent of AGCL from Lonrho in exchange for the Government's agreement to extend the terms of the company's mining lease over the concession area.

By legislation in 1972, the Government of Ghana increased its interest in the business of AGCL by forming the Company as a Ghanaian company to take over the assets, and business functions in Ghana formerly carried out by AGCL. By virtue of that legislation, the Government of Ghana obtained a shareholding of 55 percent in the Company with Lonrho holding the remaining 45 percent.

In 1994, as part of its Economic Recovery Program and divestiture policy, the Government of Ghana sold part of its holding of shares in the Company. The Company also sold shares in the 1994 Offering in order to increase its working capital and finance its exploration activities. In connection with the 1994 Offering, Ashanti was reorganised as a Ghanaian public limited company and listed on the London Stock Exchange and Ghana Stock Exchange. The reorganisation included the issuance of preference shares with special rights attached ("Golden Shares") to the Government of Ghana to enable it to safeguard the national interest. Through recent mergers and acquisitions involving Cluff Resources, Golden Shamrock Mines and International Gold Resources, the company has stock market listings in Australia, New York, Toronto and Zimbabwe.

Ashanti occupies a position of strategic significance within the Ghanaian economy. The Company is a major contributor of foreign exchange earnings to Ghana, accounting for approximately 28 percent of such revenues in 1994. In addition Ashanti is the largest company listed on the Ghanaian stock exchange and is a major employer, particularly in the Obuasi region. The Government of Ghana currently holds 19.4 percent of Ashanti's issued share capital.

2.1 GROWTH OPPORTUNITIES: RISKS AND REWARDS IN AFRICA

Ashanti's operating strategy of expansion in Africa has provoked a direct adverse impact on the market valuation of its stocks. Over the last 12 months Ashanti's market capitalisation has declined by 42 percent despite expansion of reserves and production. Analysts have undervalued Ashanti's shares relative to its peer group when measured on either short-term cashflow and earning multiples, or on market capitalisation per resource ounce ratios (see Table 2-1). Ashanti is trading at around parity with major South African producers. While, for geographical reasons, this may initially be seen as appropriate, Ashanti like its North American counterparts is a growth company, while the South Africans are not.²

<i>Peer Group</i>	<i>Country</i>	<i>Mkt Cap</i> <i>US\$m</i>	<i>Share Price</i> <i>US\$m</i>	<i>EPS</i>	<i>CFPS</i> <i>US\$</i>	<i>Mkt Cap per</i> <i>Resource (oz)</i>
Barrick	N.A.	9890		0.87	1.53	179
Placer Dome	N.A.	5893		0.47	1.64	127
Newmont	N.A.	5091		0.98	1.97	101
Battle Mt	N.A.	2887		0.19	0.46	181
Normandy	Astral.	2782		0.07	0.13	147
Driefontein	S.A.	2526		0.35	0.76	48
Homestake	N.A.	2127		0.17	1.19	65
Santa Fe	N.A.	1660		0.2	0.6	97
Ashanti		1655	15.5	0.88	1.48	31
Vaal Reef	S.A.	1591		2.5	7.41	33
Kloof	S.A.	1187		0.29	0.8	32
<i>Industry Average</i>				<i>0.634</i>	<i>1.6336</i>	

Table 2-1 Ashanti peer group

Given that Ashanti has one of the best growth profiles within the industry group, the discount to its value presents a puzzle. This thesis will examine two main drivers of Ashanti's stock valuation to better understand how they contribute to the share price:

² Interview with Jonathan De Thierry, Africa Mining Analyst James Capel, London. January 15th 1997.

1. growth opportunities for Ashanti in Africa. - To the extent that the value of a gold mine depends on future output and the current spot price discounted at a risk free rate, Ashanti's present value depends on the size of its reserves and resources.
2. the market's view of risks associated with operating mines in Africa. - To the extent that Ashanti's assets are concentrated in the region, how does the market evaluate the risk associated with operating in the region.

Next, the study will discuss Ashanti's financial and risk management strategies to assess how they add value to its activities in Africa given the two key elements that drive its valuation.

2.2 BASIS FOR VALUATION

The essential problem of stock valuation is the appraisal of assets which are created by shareholders investments. In the case of natural resource investments, the relevant asset whose value is known will often be a portfolio consisting of riskless bonds equivalent to the cash cost of operation and either the commodity which is to be produced by the investment project - be it gold, oil or lead - or a futures contract on that commodity. This is most easily seen in the case of a gold mine which will produce a known output at a known cost. If the costs are known, they can be discounted, like the payments on a Treasury bond, at the riskless interest rate, leaving only the problem of valuing the output. This later task is simple if there exist a market for forward delivery, or a futures market for the commodity. the present value of an ounce of future production is equal simply to the appropriate current futures price discounted at the riskless interest rate (to reflect the fact that payment is deferred). Indeed it turns out that this discounted futures price for gold is almost exactly equal to the current spot price because of arbitrage considerations.

This means that for commodities which are held for investments or for speculative purposes such as gold, future output can be evaluated at the current price without discounting. The value of a gold mine will therefore depend on the size of the reserves and potential success of future exploration. In the following chapter, I examine the valuation of Ashanti in the light of its reserves and the rate of growth given that it has very little competition in the form of an authentic African mining company.

3.0 PAN - AFRICAN GROWTH STRATEGY

Ashanti is primarily engaged in the mining and processing of gold ores and the exploration and development of gold properties in Africa. On the basis of 1996 production levels the company believes that it is the largest producer of gold in Africa outside South Africa. Its principal mining operations are located at Obuasi in Ghana. Gold mining has been conducted at this site since 1897. The Obuasi facility produced 860,384 ounces of gold in the financial year 1996. In situ proven and probable reserves at Obuasi are approximately 21 million contained ounces.

The Company believes that the African continent offers a wide range of exploration and development opportunities, and that Ashanti in particular is well positioned to take advantage of such opportunities because of its operational base in the region and its position as an African gold mining company. It sees and presents itself as an African company run by Africans, of all colours, for the benefit of Africa. There is calculation as well as idealism in this. Ashanti Goldfields is well aware that many African governments are leery of foreign multinationals, and especially of multinational mining companies, which they suspect of exploiting African labour and natural resources for the benefit of already affluent overseas shareholders. The Chief Executive Officer Mr. Sam Jonah was noted as saying "We consider Africa very much our constituency . . . We are Africa's favourite son and that is reflected in the kind of responses and welcomes that we get wherever we go in Africa."³

A key element of the Company's long term strategy is to build an African gold mining group to international standards of excellence. To this end, it initiated its exploration activities outside Obuasi in the second half of 1994. To date, the company has acquired direct and indirect interests in exploration licenses in nine African countries. Its exploration budget increased from \$19 million in financial year 1995 to \$28 million in financial year 1997. In 1996, its principal exploration focus will be in Burkina Faso, Ethiopia and Eritrea, Ghana, Guinea, Mali, Niger, Senegal, Tanzania and Zimbabwe.

³ Reported by The Economist, September 1996, US Edition

3.1 EXPLORATION

Ashanti's growth strategy is focused on gold exploration in Africa. It has targeted its exploration activities outside Obuasi on areas in which some preliminary exploration, such as artisanal works or geochemical, geophysical or geological surveying, has already been conducted or some evidence of the presence of gold had been identified. To date, Ashanti has acquired a portfolio of 35 exploration projects across Africa. Exploration activities are conducted by the staff at Obuasi and through the Company's wholly owned subsidiary, Ashanti Exploration Limited ("AEL"). Ashanti also participates in joint venture agreements to conduct exploration activities. In a typical joint venture agreement, Ashanti and its partner will explore any greenfield property in West Africa within an agreed portfolio, but Ashanti retains the rights to any production operations that may arise out of such exploration.

In the last year Ashanti through AEL, has expanded its exploration and operating activities through Africa. It has entered into a joint venture to appraise the Kalana mine in Mali. It owns 50 percent of the joint venture, with JCI Limited of South Africa and the Government of Mali having 30 and 20 percent of the share capital respectively.

In Guinea, the company was awarded two exploration permits in March 1995 in the eastern area of Haut Guinée, south of the Sigüiri gold mining area, covering 1,145 and 1,226 km² respectively. A third contiguous concession was awarded in May 1995 to AGEM Limited, a subsidiary of International African Mining Gold Corporation, for an area of 1,196 square kilometres. A geophysical sampling program is currently under way.

In Niger, the company signed an agreement with the government in August 1995 for the exploration of the Saoura area, which covers 1,400 km². Previous aid-funded exploration work defined a gold geochemistry anomaly at Libri, and limited drilling conducted at that time gave encouraging results. The Libri anomaly is currently a priority target with a detailed geochemical and geophysical survey program under way. The company currently plans to begin drilling after the survey program is completed, which is expected to be in the last quarter of 1996.

In March 1995, it applied for Exclusive Prospecting Orders for the Christon Bank (140 km²) and Tateguru (90 km²) areas in Zimbabwe. These are areas of past small scale production which contain prospective ironstone formations. Permission for necessary land access is currently in progress.

Table 2-2: Reserves, Resources and Production data

Country	Mine	1994		1996	
		Underground Reserves and Resources(moz)	Production (oz)	Underground Reserves and Resources(moz)	Production (oz)
Ghana	Ayanfuri	-	-	0.2	53,338
	Bibiani	-	-	1.8	-
	Iduapriem	-	-	2.3	18,970
	Obuasi	18	822,954	21.6	860,384
Guinea	Siguiri	-	-	3.0	-
Tanzania	Geita	-	-	0.9	-
Zimbabwe	Freda	-	-	2.3	95,905
		-	-		
Total				32.1	1,028,597

In Senegal the company has agreed to participate in AGEM's Bambadji and Boto-Daorala properties, which cover 1,046 km². Previous work by Anglo-American identified a number of attractive prospect areas. The Group may earn a 50 percent interest in the project by making an agreed expenditure.

In Ethiopia, the Company was awarded two blocks of ground at Medrezion (850 km²) and Catina (700 km²) in December 1995. These properties contain a number of gold occurrences, and reconnaissance field work began in the first half of 1996. In Tanzania, Ashanti has signed a joint venture agreement to explore the Bulyanhulu South and Rubondo properties, which cover an aggregate of 750 km².

3.2 ACQUISITIONS AND CONSOLIDATION

In the twelve months to December 1996, Ashanti has gone on an acquisition spree to consolidate its strategy of mining and exploration activities in Africa. On December 12, 1995, Ashanti made a recommended offer to acquire the outstanding share capital of Cluff, which is principally involved in the mining and processing of gold and the exploration for gold in Zimbabwe, Ghana, Tanzania and Guinea.

In the second quarter of 1996, Ashanti acquired International Gold Resources (IGR), a Toronto listed stock, whose main asset was an interest in the Bibiani project in Western Ghana. Ashanti paid approximately US\$100 million, equivalent to 25 percent premium to IGR's pre-bid price. This was seen by the market as a particularly good acquisition as Bibiani is relatively close to Obuasi.

By all accounts, Ashanti exploration strategy and African posture will help it develop more reserves and resources in Africa. In this regard, the present value of Ashanti shares with respect to reserves and resources should be a basis for strong valuation. However as the stock price does not reflect this valuation, let's continue to examine the second factor that could affect Ashanti; namely its operational focus in Africa.

4.0 EMPIRICAL COUNTRY RISKS ANALYSIS

In the previous two chapters, I presented an overview of Ashanti Goldfields Corporation with respect to its Pan-African growth strategy. In this chapter I begin an investigation of the other main driving forces that contributes to valuation of Ashanti stocks - risks in Africa.

Ashanti's strategy of focusing operations in Africa, means its portfolio of assets is less diversified. The effect of any major African disaster will have a major impact on the firm's valuation. To illustrate the market's consideration of Ashanti's lack of diversification in its portfolio of assets, I assembled a sample of events that could affect businesses in Africa, with the view to understanding the degree to which they provide a discount or premium to Ashanti returns.

Africa as a whole and in particular the sub-Saharan region has a history of political instability and social unrest. I conducted a survey of events in Africa that could cause civil unrest, destabilise governments and contribute to country political risk. With the help of on-line search facilities such as Dow Jones and Lexis Nexis, I scanned the global print media to record when disastrous events in Africa first appear on the news. I then classified the news into related and unrelated events that could potentially have adverse effect on Ashanti's operations. The aim of the study was to establish how the markets respond to events in Africa as a whole and more specifically how much discount the market attaches to country risks.

4.1 METHODOLOGY

4.1.1 Event Selection and Classification

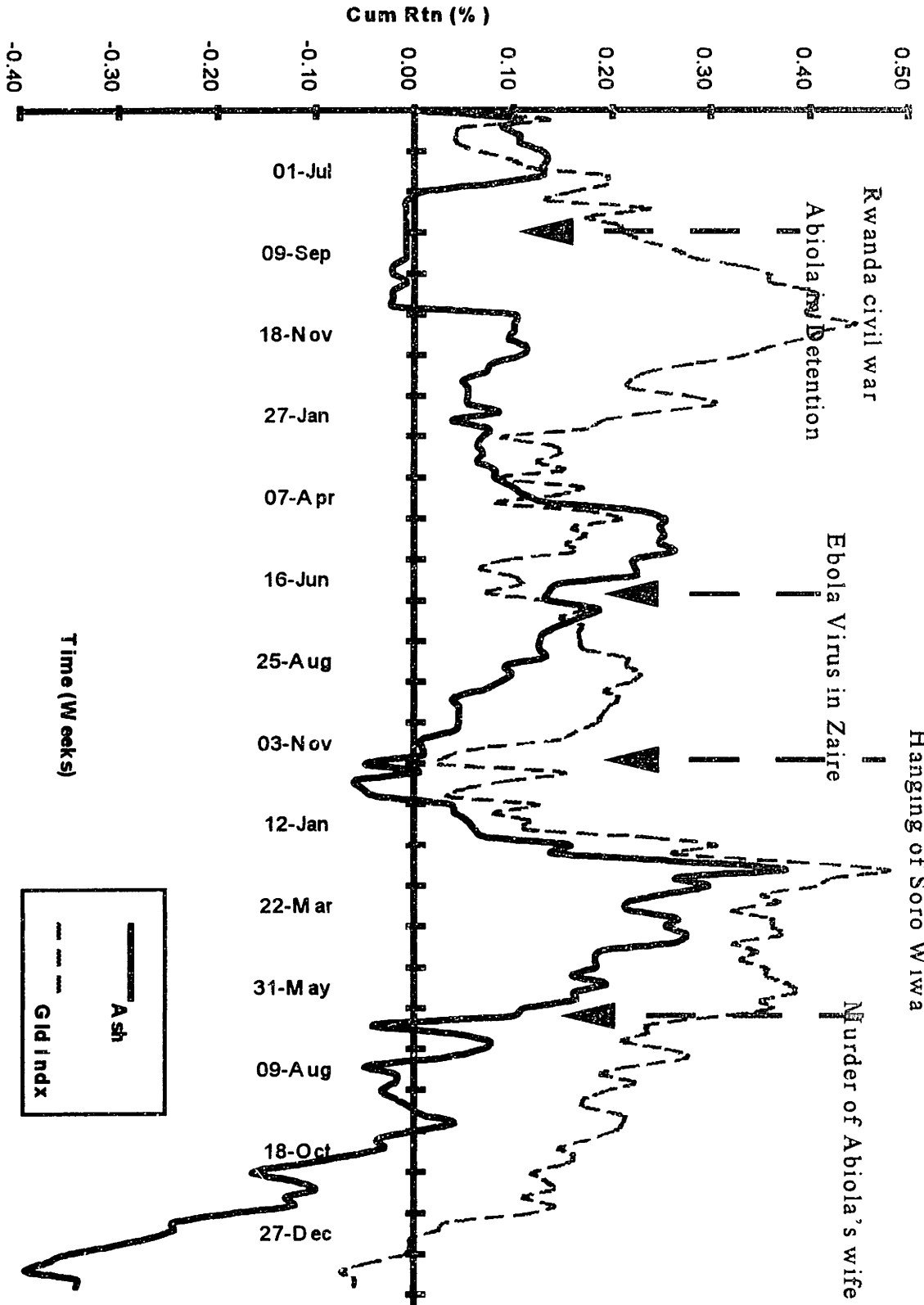
In many ways the initial hypothesis for empirical country risk study on Ashanti defined the selection of events of interest.

Null hypothesis H_{01} : Returns on Ashanti stocks are negatively affected by events in West of Africa.

I scanned the world news print for events under the headings of : Natural disaster in Africa; civil wars; democracy; political stability; civil unrest etc. etc. and came up with event in the following categories:

EMPIRICAL COUNTRY RISK ANALYSIS

Figure 4-1 illustrates the effects of selected events on Ashanti stock returns.



- *Unrelated - Events*

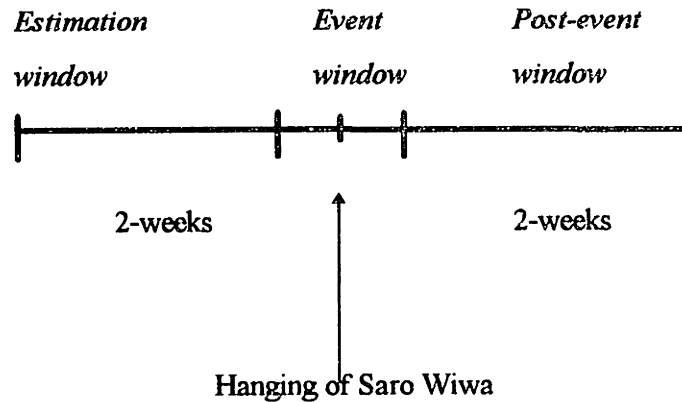
Tutu President Juvenal Habyarimana assassinated	April 6, 1994
Elections in Botswana	November 10, 1994
Ebola Virus in Zaire	May 6, 1995
Another cease-fire agreement in Angola - and Africa's longest war rages	October 17, 1996

- *Related - Events*

Tribal war in Ghana	May 10, 1995
Detention of Abiola - Nigeria	July 10, 1995
Hanging of Saro Wiwa - Nigeria	November 8, 1995
Military coup in Sierra Leone	January 4, 1996
Elections in Sierra Leone	February 26, 1996
Elections in Zimbabwe	March 20, 1996
Elections in Chad	June 2, 1996
Murder of Abiola's senior wife - Nigeria	June 6, 1996
Elections in Ghana	December 7, 1996

The criteria for selecting events, related or unrelated depended on the closeness of the event to Ghana. Hence all the events categorised under related events occurred in West Africa, as opposed to the entire African continent. Zimbabwe is included in the list of related events because of the Freda/Rebecca mine one of Ashanti's prime assets outside Ghana.

With the announcements categorised, it was necessary to specify the observation interval, the event window. Ideally, the event window should be specified in say 10 days before the event of interest and 10 days after. The wide window specification captures the price effect on Ashanti both pre- and post-event, to help analyse the adjustments of the market to these events. As the data provided in this study from Datastream were only weekly, I chose a period of two weeks each to represent pre- and post-event window.



4.1.2 A Model for Measuring Abnormal Return

A number of approaches are available for analysing events in economics and finance; the constant mean return model and the market model (MacKinlay 1997; Brown and Warner 1980). This study uses the market model which assumes a stable relation between the return on index of gold shares and the security return. Any changes in the observed measurement of the linear relationship during the time of event, abnormal return, is attributed to the event. For example, the abnormal return I expect to measure is the normal ex-post return over the event window minus the normal return as predicted by the linear relation between the market return and Ashanti return. For event τ the abnormal return

$$AR_{it} = R_{it} - E(R_{it} | X_{\tau})$$

Where AR_{it} , R_{it} and $E(R_{it} | X_{\tau})$ are the abnormal, actual and normal returns respectively for time period τ . X_{τ} is the conditioning information for the market return model. The abnormal return also strips the effects of any increases due to increase a bullish gold market.

The linear model relationship between the market return and Ashanti return naturally leads to statistical regression analysis for prediction. For any security i market model is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

Where R_{it} and R_{mt} are the period τ returns on a security i and the market portfolio, respectively, and ε_{it} is the zero mean disturbance term. α_i and β_i are the parameters of the market model.

In applications, a broad based stock market indices were used for the market portfolio; FTSE100, Global Gold Index and the African Gold index. Table 4-1 shows the result of regressions Ashanti returns with a number of market indices.

	β	<i>t-stat</i>	α	R^2
FTSE 100	-0.16	-0.99	0.0021	0.007
Global Gold Index	0.46	4.85	0.0026	0.14
African Gold Index	0.44	3.77	0.0034	0.24

Table 4-1 Base regression of returns on selected market indices with respect to Ashanti returns

As expected, the beta of all precious metal stocks with respect to the FTSE100 market index is negative because of the negative correlation effect between gold prices and economic activities. From the definition of the market model, the higher the R^2 , the greater is the variance reduction of the abnormal return and the larger is the actual gain. Although the African Gold Index (AGI) shows the highest R^2 , most of it is due to the fact that Ashanti contributes a significantly proportion to this index. Hence the R^2 we observe is due to auto- and spurious correlation. I therefore used the Global Gold Index (GGI) as the base for my market model.

To analyse the effect of African risks as defined by political instability, natural disasters etc., I represented each of the above events by a dummy variable, 1 or 0, over the length of event window. Using the GGI market model as the normal return, I regressed each event against base model measure the abnormal return. The abnormal return AR_{it} is given as

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$

To illustrate the effect of the above events on Ashanti stocks the abnormal returns are aggregated through time. This aggregation generated the cumulative abnormal return which indicates the extent to which an event has impacted returns. The cumulative abnormal returns are represented as:

$$\text{Cumulative Return} = \sum AR_{it}$$

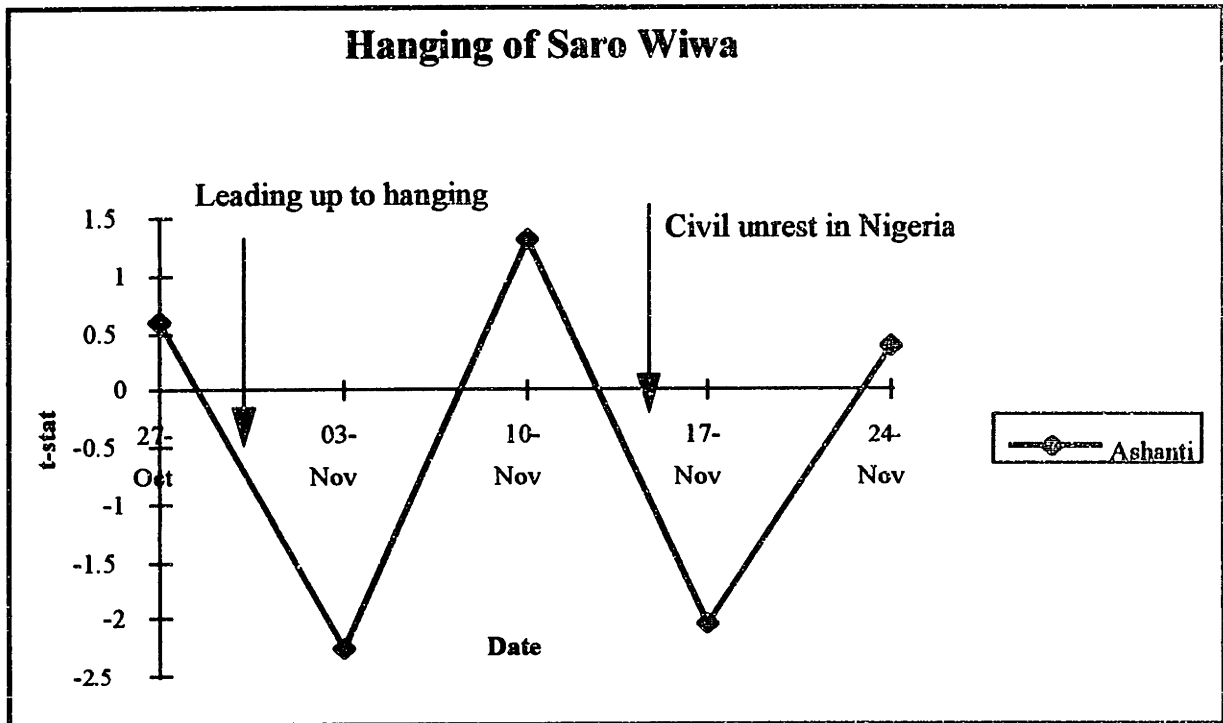


Figure 4-2 Measure of abnormal return on Ashanti return during Saro Wiwa hanging

4.2 DISCUSSION OF RESULTS

Although Ashanti has no investments in Nigeria the figure 4-2 shows that the events of Saro Wiwa's hanging had a severe effect on Ashanti. This could be explained by the closeness of Ghana to Nigeria and that the two countries are somewhat interdependent West African States. Nonetheless, even the Nigerian civil war the 1970's did not spillover to Ghana so it is difficult to explain why the market should discount for such minor events as hanging or murder.

The aggregated abnormal return for each event in Figure 4-3 also shows that over time the discount is increasing. Thus if one is not convinced by the effect of a single event such as the Saro Wiwa hanging, the general trend of cumulative effect of events on Ashanti returns clearly illustrates the markets growing perception of investments in Africa. The cumulative abnormal return on Ashanti during elections in Zimbabwe was surprisingly positive. Figure 4-4 shows that

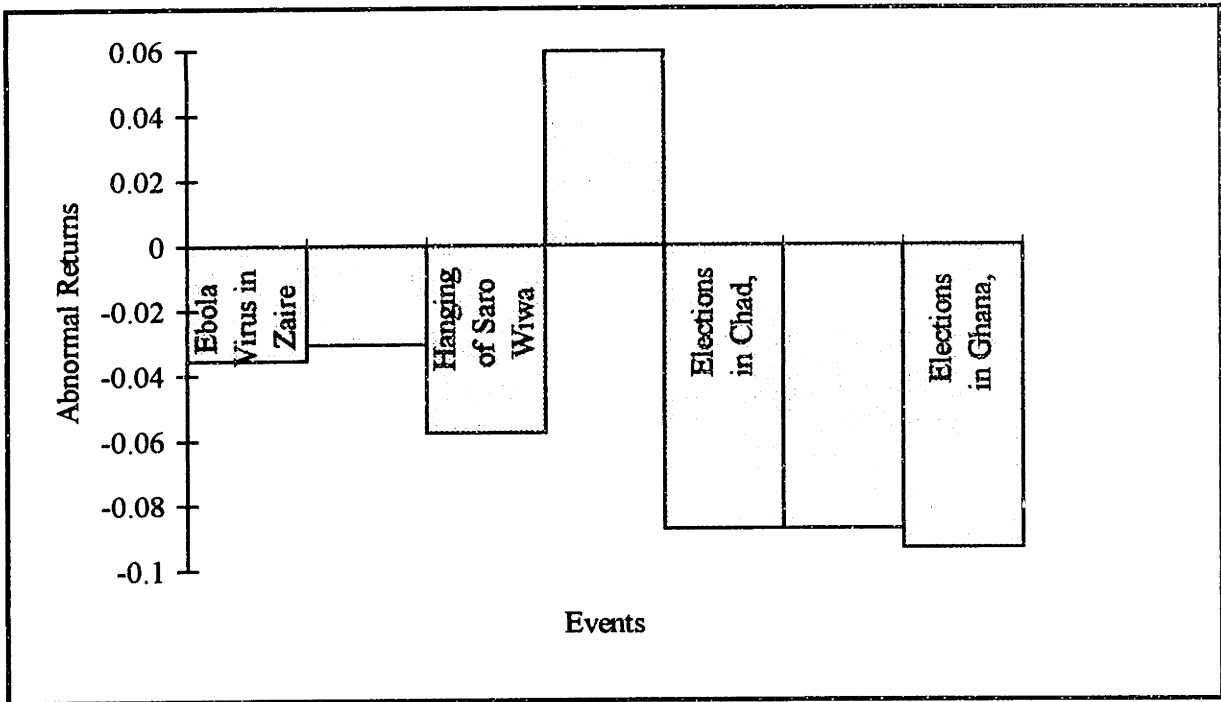


Figure 4-3 Cumulative abnormal return chart for country risk events.

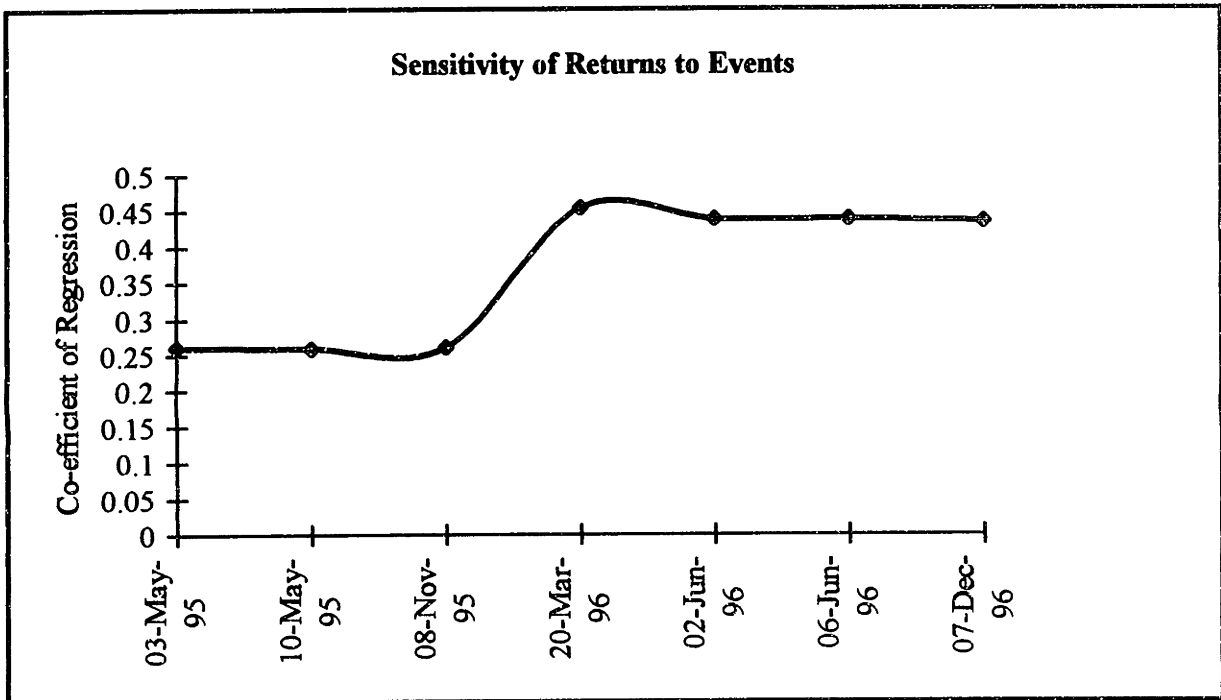


Figure 4-4 Sensitivity of Ashanti returns to events in Africa

not only is Ashanti heavily discounted for events in Africa but also that returns have become more sensitive to events in the region. The results of this study suggest in Figure 4-3 and 4-4 that there is

a market discount on Ashanti's returns relative to the Global Gold index resulting from adverse events in Africa but more importantly this discount is increasing with time.

The study confirms the null hypothesis that Ashanti's operating and investment strategies are subject to country risks of all kinds in West Africa. Given that no amount of diversification will reduce the risks associated with investments in Africa, Ashanti's needs to attract international investors, part of its business strategy should be geared toward communicating with investors and educating them on the differences among African countries. This would help investors separate the general effect of African events on Ashanti.

While I have taken every precaution to present this analysis, the results of this study are still subject to scrutiny. Firstly, the weekly data used for this study is not as reliable as one would have wanted. Event studies are best performed with daily data to better capture the specific effect of the event. Second, one could argue that in view of the inadequacy of the data, selecting event windows as wide as two weeks increases the error margin. However my aim in this study is to illustrate, in general, the direction in which the market reacts to unrelated events in Africa with particular respect to Ashanti. Given this central aim, the results clearly demonstrate the market's perception of Africa in a concise and articulate fashion.

Given the market's assessment of Ashanti, and the fact that this valuation is driven by events in Africa, I now turn to an examination of Ashanti's financial policies to determine how the management team has structured its financial policies to present growth opportunities in Africa whilst mitigating the risks associated with investment in Africa to create value. The specific elements of the financial policy I will examine are: funding strategy, including both debt and equity, and risk management of gold prices.

While Ashanti has huge potential for growth by virtue of its Africanness, the risk of concentrating its assets in the region has a potentially damaging effect on the valuation of its share price. However to the extent that it is able to raise capital for investment in this region, let us look at the financial policies to examine how they add value to operation in the region and to determine if they are consistent with a growth in a highly risky macro and political environment.

5.0 FINANCING FOR GROWTH

A preliminary way of expressing the questions this thesis is trying to address is to ask what Ashanti's financial decisions are trying to achieve. The standard objective function of any financing decision given the firm's assets and investment plans is to maximise its value using the appropriate capital structure.

In their pioneering work, Myers and Majluf (1984) showed that if investors are less well-informed, than current firm insiders about the value of the firm's assets, then equity may be mispriced by the market. If firms are required to finance new projects by issuing equity, underpricing may be so severe that new investors capture more than the NPV of the new project, resulting in a net loss to existing shareholders. In this case the project will be rejected even if its NPV is positive. This underinvestment can be avoided if the firm can finance the new project using a security that is not so severely undervalued by the market. For example, internal funds and riskless debt involve no undervaluation, and therefore will be preferred to equity by firms in this situation. Even (slightly) risky debt will be preferred to equity. Myers (1984) refers to this as a "pecking order" theory of financing, i.e. that capital structure will be driven by firms' desire to finance new investments, first internally, then with low-risk debt, and finally with equity only as a last resort. Let's examine how Ashanti's financing policy matches with the "pecking order" theory

5.1 INTERNAL FINANCING

Prior to its emergence as an international mining company, there was little known about Ashanti's financial structure except to note its dependence on the IFC, the private-sector arm of the World Bank that acts as banker to businesses investing in developing countries.

Before the flotation Ashanti depended on the IFC as an internal source of funds to finance investment projects. This dependence totalled \$159.3 million in the form of long term loan and gold loans. (see Figure 5-1) However since the flotation the Chief Financial Officer, a former treasury

manager at the IFC, has reduced this dependence to \$4.6 million of loans. The need for capital flow for investments has been met by a mixture of debt and equity from the capital markets.

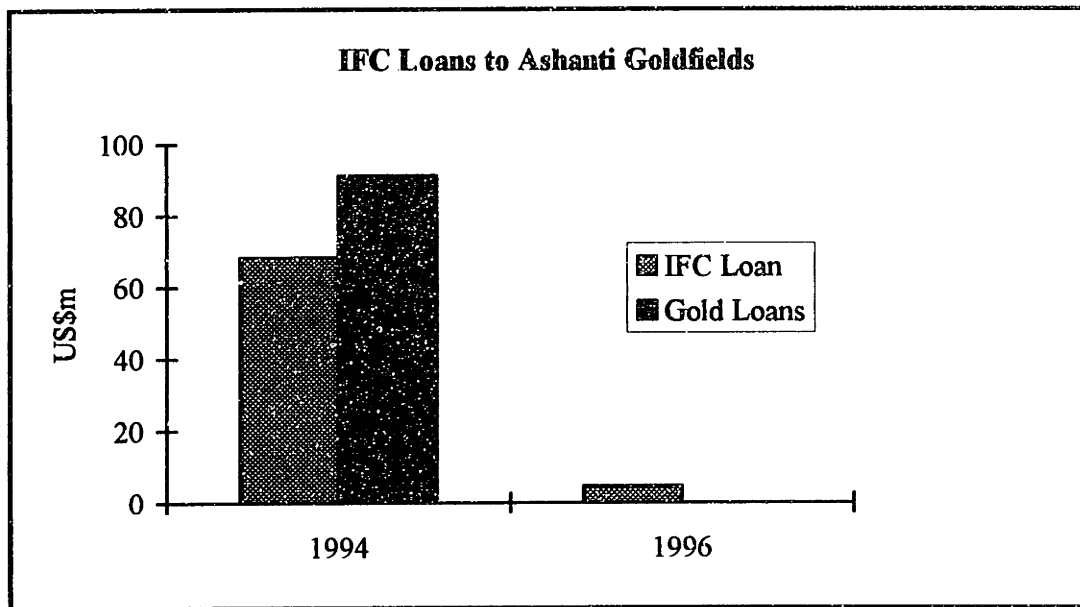


Figure 5-1 Dependence on IFC Loans.

5.2 DEBT FINANCING

In considering the idea that the pecking order theory is part of a solution to capital structure for growth opportunities, I now turn to debt financing as a riskless option in the order of capital for investments.

The seminal contribution in this area is that of Ross (1977). In Ross' model, managers know the true distribution of firm returns but investors do not. Managers benefit if the firm's securities are more highly valued by the market but are penalised if the firm goes bankrupt. Investors take large debt levels as a signal of high quality. Since lower quality firms have higher marginal expected bankruptcy costs for any debt level, managers of such firms do not imitate higher quality firms by issuing more debt.

As a reward for bearing risk, lenders exercise considerable influence over the investment decision of business corporations. They exercise this by adjusting the interest rate as leverage increases, or by refusing to lend to firms that are too highly leveraged. In addition creditors often impose restrictions on borrowers that prevent them from issuing additional debt above some well defined limit. This adjustment in required return implies a higher cost of debt for firms as they increase leverage, at least above some threshold. After allowing for risk, a project will be deemed acceptable if it increases the wealth of existing shareholders and meets interest obligations. This requires that the project generates a return exceeding its financing costs in terms of the new debt needs. As a consequence, the return that creditors require from a firm reflects not only the operating risk of the firm, but the risk implied by the firm's leverage as well.

Borrowing made or guaranteed by Ashanti	1996 (US\$m)
Exchangeable Notes (5.5%)	244.7
Revolving credit facility (LIBOR + 1.05%)	64.9
Supplier Credits	12.9
Finance Leases	8.7
Aviation Loans	4.7
Bank loans and Overdrafts	<u>6.4</u>
Total	342.3

Table 5-1 Long term debt schedule .

The degree to which Ashanti can access capital therefore depends on the costs incurred on borrowing. To measure Ashanti's access to capital, I looked at the change in cost of borrowed capital over the two years.

In the two years since Ashanti has been on the market its cost of capital has reduced. IFC loans made to Ashanti previous to the flotation were quoted at six months LIBOR + 2.5. To refinance the IFC loans, Ashanti acquired a US\$185 million revolving credit facility provided by 18 international commercial banks at the cost of six months LIBOR + 1.05. The banks have adopted prudent credit risk management by syndicating the loan as this is first time Ashanti has borrowed in the international market. The fact that 18 commercial banks were willing to provide a credit facility at this rate the first time Ashanti comes to the debt market points to credibility and

confidence in the company. This reduction of 145 basis points on its cost of borrowing is extremely good for Ashanti's credit rating. This sets Ashanti up to raise more debt in the future. The view that having a close relation with bankers, who as insiders have better information about the firm's prospects than outsiders and are better able to supervise its behaviour implies that the loan approval process should convey one piece of important information in line with the Ross model described above: the banks believe that Ashanti has growth potential and positive NPV projects in Africa.

This signalling process will enable Ashanti to then go to the bond market to raise more debt if needed. Potential instruments include syndicated bank loans; Yankee or high-yield bonds; and GDRs and Euroconvertible bonds. The strategy with Euroconvertibles and GDR's is to place these with groups that are chasing high yields but have little exposure to Africa. Compared to Western issues, the size of these issues is small enough to allow them to be placed during the roadshow which also lowers issuance costs. This allows investors to diversify their portfolios to include Africa but as a small proportion of asset class of their total portfolio.

Another attractive debt instrument is the structured commodity-linked bond such as a gold-indexed bond. Ashanti would assume gold price risk in return for lower coupon payments, but its attraction is that it will also serve as a hedge if gold prices fall because the coupon payments are less. By linking payments to gold, debt repayments will be higher during high income periods of the mine and vice versa. Additionally, repayments linked to gold will serve as a signal of management's confidence in the resources and reserves available to Ashanti over the long term. Turbulent gold markets, witnessed recently following heavy sales by central reserve banks in Europe, impair the prospect of launching "plain vanilla" or straight eurobond issues. A gold-linked bond provides the stability of coupon payments on the bond regardless of revenues made from the sales of the commodity in times of market turbulence.

5.3 CONVERTIBLE DEBT

In February 1996, Ashanti through its Cayman Islands subsidiary raised US\$250m of seven years 5.5 percent exchangeable notes which are exchangeable into ordinary shares of the company at an

exercise price of US\$27 per share. The issue was structured more to appeal to international investors through being SEC registered in the US while being available to bearers from elsewhere.

The convertible offers investors a play in the high payoffs to equity if Ashanti suddenly discovers a large new reserve through its aggressive exploration program, but it also offers them the downside protection of a fixed-income security when the prospects are not so great. With this issue Ashanti is gradually trying to minimise the divergence in the market's risk assessment of its investment strategy. Given that Ashanti share are currently trading at US\$15.5, the convertible price of US\$27 is manifestation of management's belief that Ashanti has potential and that the stock price will return to the high end of its valuation

5.4 EQUITY PLACEMENT

The pecking order theory details equity as the last and final resort for new investment opportunities. In the case of Ashanti and for that matter many companies in emerging economies, listing on an international exchange provides more than capital, access to an internationally diversified investor base and capital market information that informs management about the firms performance and value. More importantly, foreign listings provide an opportunity to improve the domestic capital market institutions. Several studies have investigated the costs and benefits of listing on a foreign stock exchange (see Mitoo 1992, Saudagaran 1988, Alexander et al 1988 Howe and Kelm 1987). The major benefits of listing on a foreign exchange are identified financial, marketing and public relations, and political.

Financial: The major theoretical rationale for foreign listings is the segmentation of capital markets. Capital markets can be completely segmented, partially segmented or completely integrated. In completely segmented capital markets such as in Africa, the cost of capital is higher because international investors are unable or unwilling to invest in this region. To the extent that international investors are better diversified they may demand less return for risk, often at a lower cost. Segmentation typically occurs because of barriers to capital flows including:

- government controls on foreign exchange and capital controls, tax policies,
- language, cultural and legal barriers

- knowledge and information barriers, and the cost of purchasing securities.

In the Ghanaian Government's bid to privatise Ashanti and to present the company as the bastion of economic reforms, it removed obstacles to capital flow, essentially improving investment opportunities for the whole private sector.

Many foreign firms would list overseas in order to change the control structure of the firm either in terms of shareholders or in the debt-equity mix of the capital structure. In recent years the onset of privatisation has provided many state owned enterprises with the opportunity to change the ownership structure of their corporation to provide a cultural change in the way the company is run. In the particular case of African countries the privatisation of a huge national asset means the economics of the country becomes exposed to market efficiency. For example, Ashanti dominates the Ghana Stock Exchange (GSE) by 75 percent of market capitalisation. Trading of its shares in Accra, London and New York means segmentation of the domestic and international market is reduced.

<i>Shareholder Profile</i>	<i>No of Shareholder</i>	<i>% of Shareholders</i>	<i>% of issued shares</i>
Private Individuals	31210	96.2	1.5
Pension Funds	24	0.1	0.1
Insurance Companies	33	0.1	0.1
Private/Investment Trust	101	0.3	0.4
Other Corporate Holders	106	3.3	97.9

Table 5-2 Ashanti Shareholder Profile

A glance at Table 5-2 shows that 96.2 percent of mainly Ghanaian shareholders, currently have 1.5 percent of issued shares whilst 3.3 percent of mainly foreign investors have 97.9 percent of issued shares. Foreign investors therefore have a disproportionate amount of representation therefore financial policies as well as investor relations programs would be geared to their needs. As Ashanti dominates the GSE, best practices engaged by the company to create transparency in accounting and financial policy will inevitably be transferred to the rest of the economy.

Marketing and Public Relations: Another important aspect of a foreign listing is the increased publicity and name recognition that accompanies the initial listing. Potential investors become

much more interested in the company and the country, creating a greater market demand for the company's its products as well as its securities. Foreign listing is also a signalling mechanism that the company is attempting to become a major player in the industry.

Political Benefits: As companies do business abroad, they often confront protectionist attitudes from the host government and consumers. By listing on the foreign exchanges, companies not only derive the public relations benefit but they also make shares available that can be used to meet local ownership requirements for joint ventures. This allows the company to diversify the funding sources for its local affiliates rather than rely on local debt markets which may be controlled, or on continual infusions of capital from the home country. In politically and economically unstable markets, a company would rather tap local markets than put more of its own capital at risk.

A typical example of financial markets strategy that mitigate political risks is the forthcoming issue of Zimbabwe Depository Receipts on the Zimbabwe Stock Exchange. In April a company spokesman announced in Zimbabwe that Ashanti was exploring ways to increase trading in its shares on the Zimbabwe stock exchange by offering a 1-100 split. This would involve creating a new instrument called the Zimbabwe Depository Receipts. By using local capital to fund activities in Zimbabwe, the risk of losing Ashanti's own capital is reduced. Ashanti also minimise political risks by essentially becoming a local player just as it seeks to be an international group. The new ZDRs is the beginning of a brand name for an African multinational, a brand name that would be difficult for an African Government to ignore.

5.4.1 Initial Public Offering of Ashanti

An initial public offering can be made by either of two methods: "firm commitment" or "best efforts". The choice between firm commitment and best efforts come down once again to resolving the problems created by the information disparity between informed and uninformed investors. In the firm commitment offering, the investment bank guarantees that an agreed upon amount of capital will be raised, effectively staking its credibility on the line that the deal will succeed. The underwriter buys all the stock issue at an agreed price and is then responsible for selling it all. A group of underwriters typically form a syndicate with the lead underwriter to sell the shares and thus share the lead underwriters risk, the issuer bears no risk. As a relatively obscure company it

was safer for Ashanti to contract an investment bank to underwrite the shares, although this process is more expensive. (See Exhibit 2 for Tombstone of syndicate partners for Ashanti IPO).

By contrast, in the case of the best efforts contracts the issuer and investment bank negotiate an offering price. The underwriter uses its “best efforts” to raise all of the desired capital at the negotiated price, usually receiving a percentage of the capital raised as its fee. If there is not enough demand at this price the offer is withdrawn from the market and the issuer does not raise any capital. The best effort offering reduces the risk faced by the underwriter and left much of the risk to be borne by the issuer. The underwriter has little incentive to market the shares as the fees are very low, unless the issue is grossly under priced.

5.4.1.1 Details of Initial Offer

At the time of IPO, the Government of Ghana owned 55 percent of the share capital of Ashanti and Lonrho owned 45 percent. As part of its economic liberalisation and privatisation programme, the Government decided to sell approximately 22.4 percent of the existing issued share capital of the company. In addition, Ashanti offered New Shares representing approximately 4.4 percent of the existing issued share capital to raise US\$57m to be used for future capital expenditure and exploration programme.

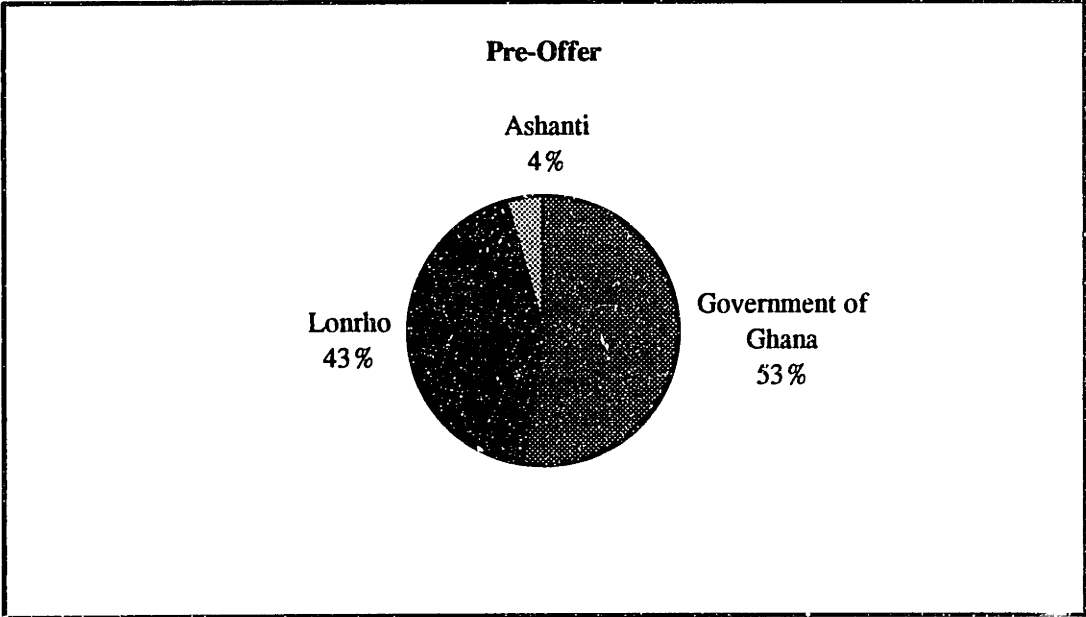


Figure 5-2A Ownership structure at initial offer

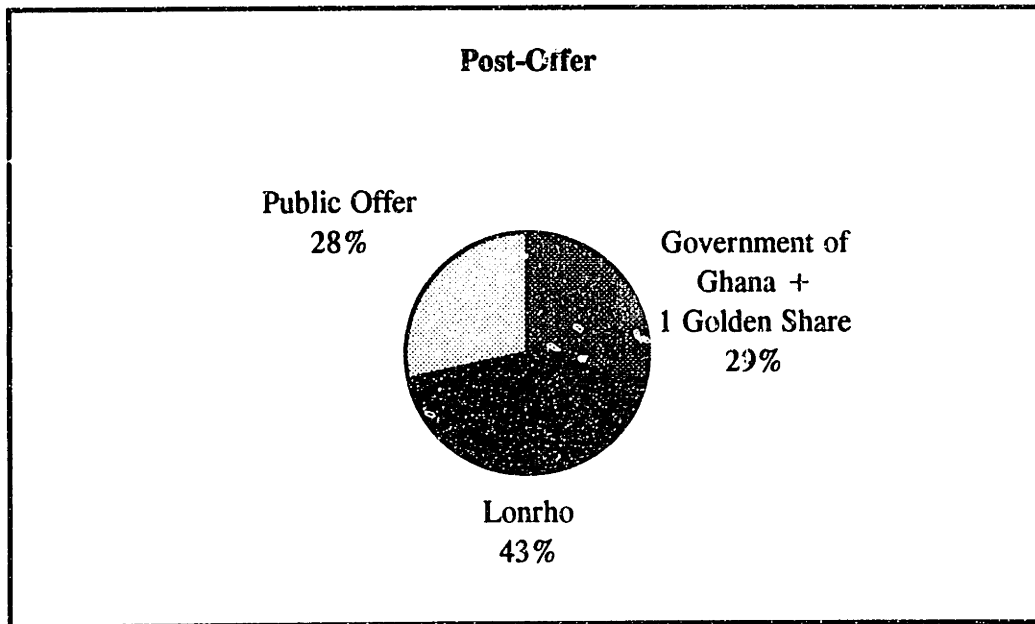


Figure 5-2B Ownership Structure of Enlarged Share Capital

The initial Offer comprised 21,400,000 Offer Shares, representing 25.6 percent of the enlarged issue share capital of the company. 17,900,000 of the Offer Shares were offered by the Government and 3,500,000 of the Offer Shares by Ashanti. The Global Bookrunners James Capel, London, were given the right to purchase up to 2,500,000 Shares at any time during the period ending 30 days after the allocation of the shares under the international offer (The Green Shoe Option).

Under the international offer, the Government sold 15.6 million shares and the Company offered 3.9 million shares. Under the Ghanaian offer, the Government sold 3.2 million shares to institutions and individuals resident in Ghana and to Ghanaian citizens resident in other a limited number of countries. Following the offer, the Government of Ghana owned 28.6 percent of Ashanti's issued share capital while Lonrho owned approximately 42.9 percent. In addition the Government owned a Golden Share to enable it to safeguard the national interest. Ashanti was not placed on the NYSE at the initial offering because of the stringent requirements of the S.E.C. But on February 21, 1996, shares of Ashanti in the form of American Depository Receipts (ADR), began trading on the NYSE as the first African operating company to list in New York. Ashanti's predecessors mostly from South Africa have chosen to list the shares on Nasdaq.

The ADRs or Global Depository Receipts (GDR), named for the markets in which they trade, represent claims on shares held in trust by a depository. Ashanti's GDRs are issued by the Bank of New York Depository, the receipts are registered financial instruments and has the ratio of one GDR to one ordinary share. The main advantage of depository receipts for both Ashanti and investors at large is that the depository is responsible for conversion of dividends into foreign exchange and for the distribution of dividends and financial statements to investors. In addition, unlike foreign investment in a firm's domestic equity market, because the depository receipts are registered securities in the US, settlement is facilitated and restrictions that some institutional investors face on holding of foreign securities can be avoided.

5.4.2 Seasoned Offering

The first of Ashanti's acquisitions which led to more equity issues was Cluff Resources. Ashanti issued 2.5m ordinary shares to acquire Cluff Resources plc and 800,000 further for Cluff Resources Zimbabwe Ltd. to gain access to the Zimbabwe Stock Exchange. In this transaction, Ashanti acquired a multi-million dollar potential of 1.32 million ounce resource already delineated at the Geita property in Tanzania, two operating mines; the Freda/Rebecca Mine in Zimbabwe and the Ayanfuri mine in Ghana for a combined total of US\$137m. The latter is less than one hour drive from Obuasi which has allowed for shared management.

In the second quarter of 1996, Ashanti acquired 45 percent of International Gold resources (IGR) a Toronto listed stock whose principal asset was in Bibiani, Ghana. Ashanti initially paid approximately US\$63.1m in a stock and cash deal and in the process issued 3.45 million shares of no par value to be listed on the Toronto Stock Exchange. This was seen as a good acquisition by the market and in line with Ashanti's growth strategy, especially as Bibiani is close to Obuasi and can share resource and management expertise. Subsequently, Ashanti acquired the 45 percent interest in Bibiani by offering 1.557 million shares equivalent to US\$31.1m to the Libyan Arab Mining Company. The remaining 10 percent of the Bibiani gold project held by the Ghana Government was acquired with the issue of 1million Ashanti shares in January 1997.

Of all Ashanti's acquisitions, Golden Shamrock Mines (GSM) proved the most protracted. As Ashanti's stock price was then in free fall senior management could not easily convince shareholders about the economic justification for the deal. The GSM deal gave Ashanti access to

the Iduapriem operating mine in Ghana and a license to the Siguiri deposit in Guinea. Ashanti issued 11.8 million shares of no par value to exchange one for every 22.5 shares of GSM. This further gave Ashanti access to international equity by listing on Australia Stock Exchange. Through its acquisition strategy (Figure 5.3), Ashanti is consolidating operation and exploration activities where its core competence and knowledge of the region is best utilised. However there is another dimension to this strategy which is of course to gain further access to international investors to increase debt capacity.

Table 5-4 shows that Ashanti has gradually increased the debt portion of its capital structure from 7 percent in 1994 to 20 percent in 1996. This strategy confirms the pecking order model as well as Ross' model of high debt for quality firms.

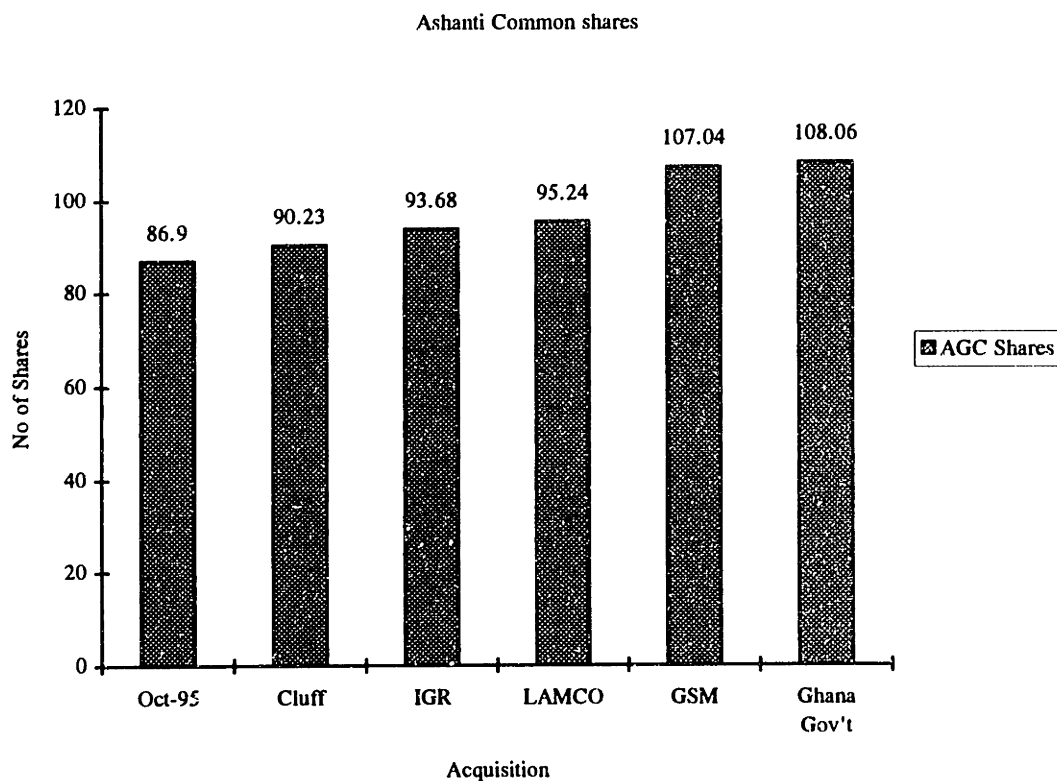


Figure 5-3 This illustrates increase in shares to facilitate acquisitions

	1994	1995	1996
Net income (US\$m)	97.8	105.9	81.4
Shareholders equity (US\$m)	449.2	572.4	517.4
ROE	22%	19%	16%
EPS	1.33	1.22	0.88
Debt (US\$m)	130.3	192.9	342.3
Excess cash (US\$m)	106.5	128.3	60.3
Shares outstanding (m)	83.9	86.9	108.059
Share Price (US\$)	20.8	19.5	13.3
Market value (US\$m)	1745.12	1694.55	1437.185
Debt-Equity ratio	7%	11%	20%

Table 5-4 Financial statistics

To summarise, Ashanti's capital budgeting policy has been consistent with the pecking order theory as follows:

- Initially it depended solely on the IFC for both internal and external financing however for the last three years, its cash resources have been reduced indicating that part of its exploration program, the largest proportion of capital expenditure budget, is funded with internal reserves.
- The evolving capital structure indicates that Ashanti is increasingly dependent on debt for capital expenditure programs. The debt has been mainly composed of bank loans and convertible issues. The commercial banks as lenders have served the role of monitoring Ashanti's investments and signalling their approval to the capital markets of Ashanti's investment program.
- To increase the debt portion of a conservative capital structure Ashanti has had to increase its equity base, initially through an IPO then subsequently using seasoned offerings through acquisition. Without more equity, the capital structure would cease to be conservative and debt would become more risky. Lenders would charge a high cost of capital to provide loans to

Ashanti. The net result would be that Ashanti passes over positive NPV projects because of lack of funds.

- Seasoned offerings through acquisitions were less sensitive to informational effects because they were mainly seen as public relations exercises. In addition, being listed on the NYSE, which has the most stringent listing requirements, has made it easier for other stock exchanges to accept Ashanti. The result of multiple listings is that Ashanti has lowered its cost of capital.

Ashanti is a growing company and has several opportunities in Africa. The above analysis shows that management through their choice of financial policies has been communicating these growth opportunities to the market. To do this it has relied on less risky and information insensitive financial instruments, predominantly debt and convertibles. Access to these instruments has been possible only because Ashanti is now traded on a multiple of stock exchanges. In effect Ashanti's financial policies have been consistent with its strategy. I therefore see no particular reason for discount in valuation apart from the fact that assets are concentrated in one region.

5.5 CONTROL OF NATIONAL HERITAGE

The subject of control is a delicate issue with African governments and it requires sensitivity and a careful balancing act. The most obvious example where control plays an important role in financial decisions is the typical family-owned business. Accustomed to having complete control over all decisions, including compensation, families are often reluctant to issue public shares even when the cost of equity would be substantially below the cost of debt and when the issuance of debt might increase the riskiness of the firm. Consider the State Owned Enterprise as the family owned business of an African government. To relinquish control of a national heritage to a Western firm is tantamount to return to the pre-colonial era.

To balance Ashanti's need for more equity placement and the discipline of the market against the Ghana Government's need to safeguard a national interest, investment bankers have cleverly designed a "Golden share" with a special rights redeemable preference of no par value. The Golden Share is non-voting but the Government is entitled to receive notice of and to attend and

speaking at any general meeting of the holder of any class of share. On liquidation of Ashanti, the Golden Share has a preferential right to return of capital, the value of which will be 1,000 cedis or its equivalent of US\$1. The Golden Share however has no further right to participate in the profits or assets of the company.

Ironically the Golden shares add value to Ashanti because one of the main worries of foreign investors in emerging economies is the concern that a new government may expropriate their assets. The Golden Share gives the government enough influence on ownership of national assets, but it does not entitle it to reverse the claims in any shape or form.

6.0 RISK MANAGEMENT

Historically, gold prices have fluctuated widely and are affected by a number of factors such as demand for precious metals, forward selling by producers, sales and purchases of gold by central banks, and production and cost levels in major gold producing regions. Moreover, gold prices are affected by macro-economic factors such as expectations of inflation and interest rates. Ashanti's profitability and ability to pay dividends, service debt obligations and to undertake capital projects is significantly affected by changes in the market price of gold. It is important that Ashanti maintains its financial credibility with regard to both investors and host countries alike.

For investors to continue committing capital, they need to see returns in the form dividends or capital gains. To provide these returns and be able to continually attract capital Ashanti must prove itself indispensable to the host countries where it undertakes projects. The subject of natural resource exploration in any country is often one of national debate that carries the label of urgency. Ashanti's ability to respond to the urgent needs of the host country will depend on the size of its financial war chest. This creates a tension between the financial markets and the host countries with Ashanti in the middle. The only possible way that Ashanti can manage this tension is to ensure a stable stream of earnings distribution to all parties. The devices of gold price risk management provide the excellent means to ameliorate this tension.

6.1 COMMODITY PRICE RISK MANAGEMENT

At a first glance, one might expect that no firm in the gold mining industry would choose to manage risk at the price level. Given an extensive gold derivative market, investors can modify gold price risk almost as well as mining firms can. Some would argue that as investors buy gold stocks as a hedge against inflation and other macro economic events, as such mining companies themselves should not manage their exposure to price fluctuations. However the idea that corporate hedging is better than the individual investor's on the grounds of transaction costs serves to add weight to the argument for corporate risk management. Consequently risk management is relevant only if it can reduce the firm's transaction.

A set of articles, including Stulz (1990), Lessard (1990), and Froot, Scharfstein, and Stein (1993) argue that without risk management, firms will be forced to pursue suboptimal investment policies. Most of these articles posit a strong link between cash flow and investment due to capital market imperfections, typically information asymmetries. When the firm's cash flows are low, obtaining financing is very costly, inducing the firm to scale back value-maximising investments. Risk management programs that break this dependence of investment of cash flow can maximise firm value. Froot, Scharfstein, and Stein's theory suggest that firms with key planned investment programs and costly external financing would be inclined to use risk management to avert the need to access costly external financing to continue these programs. Tufano (1996) uses many of these arguments to investigate risk management in the gold mining industry

A decline in cashflows could bring a halt to the major investment programs of Ashanti: exploration and acquisition. To the extent that Ashanti is committed to exploration activities and acquisitions as a growth strategy it is particularly vulnerable to a decrease in cashflows resulting from country, demand or operating risks. Additionally, investors who buy Ashanti stocks do so with the expectation of realising the embedded option associated with Ashanti's exploration activities in Africa. To maintain the value of this option, Ashanti must continue exploration activities.

6.1.1 Hedging Policy

Gold mining firms can manage risk through diversification, hedging and insurance (Merton 1993). Ashanti is little diversified in terms of products, 99 percent of revenues come from gold production. Insurance as a risk management device has been superseded by derivative products that give an upside potential if prices appreciate. Ashanti conducts hedging operations to reduce the risks associated with gold price volatility.

The principal hedging technique used is to sell gold forward on a spot deferred basis. Spot deferred allows Ashanti to defer delivery of the gold under contract by rolling the contract forward upon expiration, usually subject to a five or seven year limit, and to receive the original contract price plus the interest-like premium prevailing in the gold market at the time of the deferral for forward sales of comparable maturity.

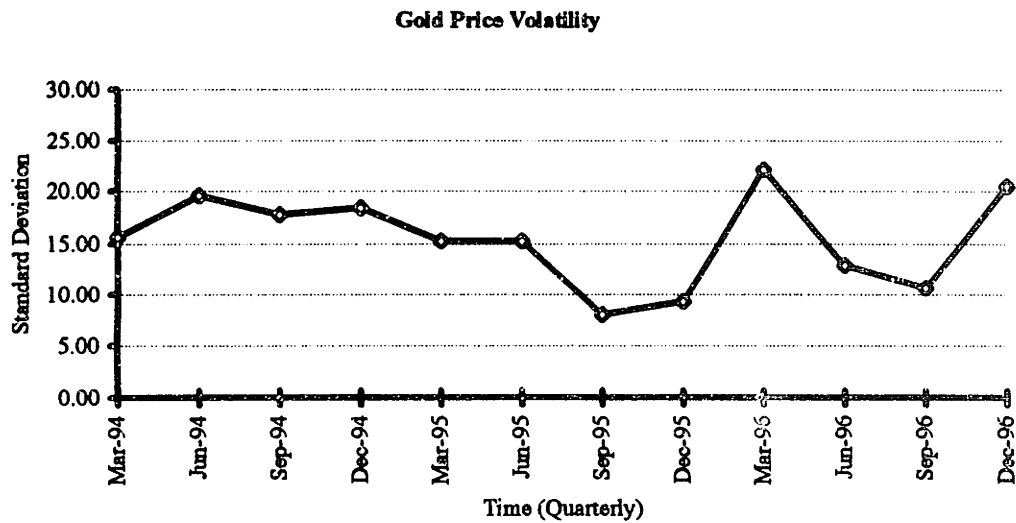


Figure 6-1 Gold Price volatility.

Source: Data Stream

To a lesser extent, the company also sells gold forward with no spot deferred feature and sells short term options. The effect of these hedging transactions is to set the price at which the gold covered by the hedging contracts will be sold at the time of delivery, thus reducing the risk of subsequent price fluctuation. A substantial amount of Ashanti's production through the financial years 1996 to 1998 have been hedged. To the extent that that the company hedges its production, it may not fully participate in increases in the spot price of gold on the portion of its production that is hedged.

In all three years, Ashanti has pledged over 100 percent of its annual production cycle with a combination of forward contracts and options. Table 3-1 shows that in 1996, Ashanti had a gross short position of 3199 thousand ounces that was in the money. In the aggregate, a US\$1 drop in the gold price, the market value of Ashanti's gold derivative portfolio should rise by US\$3.2m. Effectively the volatility seen in gold prices over the last two years has had little effect on revenues. Table 5-1 shows that the proportion of Ashanti's gains as a percentage of bullion revenue is increasing. On the surface this hedging strategy may seem over-ambitious but a closer look might suggest that the program is more tailored to the financial and operating conditions of a growth company in Africa.

	1995	1996	1997
<i>Spot deferred contracts</i>			
Amount hedged (000's ounces)	708	771	982
Average price (US\$/ounce)	399	424	426
<i>Fixed forward contract</i>			
Amount hedged (000's ounces)	180	180	25
Average price (US\$/ounce)	398	422	440
<i>Put options purchased</i>			
Amount hedged (000's ounces)	139	69	145
Average price (US\$/ounce)	362	378	434
<i>Call option written</i>			
Amount hedged (000's ounces)	204	261	211
Average price (US\$/ounce)	394	400	443
Production hedged (000's ounce)	1231	1281	1363
Group actual production (000's)	937	1026	1100*

Table 6-1 Sales from gold bullion arising from hedging.

* Forecast of 1997 production

Ashanti adds value to its operations through this hedging strategy as a commodity risk management device. The last years has seen many central banks selling gold at a frantic pace which has led to increased volatility in the market and rapid decline in prices from a peak of US\$440 to a low of US\$340.

- By pledging its production at a stable contract price, Ashanti is insulated from the volatility in the market. It effectively has a stable revenue stream and retained earnings with which it can use to continue its aggressive exploration program. This hedging program is also consistent with the pecking order theory of capital budgeting, to the extent that Ashanti depends more on internally generated funds for investments. A strong financial position of internally generated funds also gives Ashanti a strong bargaining position with African governments who would see the company as a financially able partner to undertake investment in the country.
- By pledging all its gold production Ashanti has in effect restricted the ability of the host sovereign state to interfere with the sales of the commodity. To the extent that ownership of the gold has been transferred to international banks, Ashanti has indirectly enlisted the support as

leverage in political risk management. If a new government decides to expropriate the mine it would first have to convince the banks of its rightful ownership to the product. This negotiation process could ultimately affect the reliability and credibility of the new government among the international community.

- Yet another reason for this hedging policy is that Ashanti has recently come under fire for poor management and operating results. “Part of the decline in the share price is that Ashanti promised a production target of 1 million ounces at Obuasi and as at year end 1996 was only barely able to meet this target. I think the management has some problems”.⁴ A plausible explanation put forward by Breeden and Viswanathan(1996) suggest that outsiders cannot observe managerial quality, nor can they disentangle profits due to managerial quality as compared to exogenous market conditions. As a result, managers may prefer to engage in risk management so as to better signal their abilities to the market. By hedging all its production in a forward contract, the management of Ashanti has put its credibility on the line. Over the next three years it can either salvage its reputation by meeting these pledges or face further decline in stock prices.

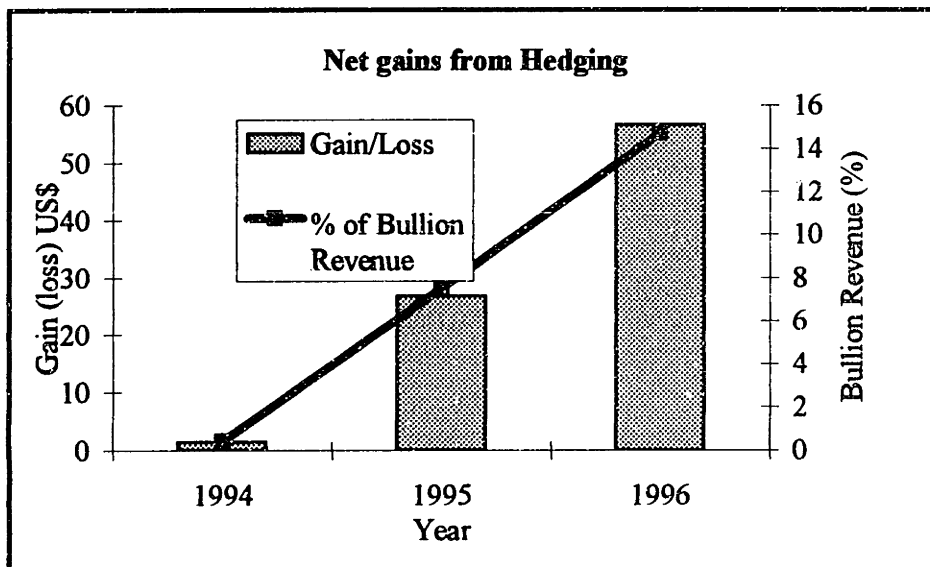


Figure 5-2 Net gains from hedging policy

⁴ Interview with Andrew Simpkin, Corporate Finance Africa Mining Duetsch Morgan Grenfell, January 1997

7.0 CONCLUSION

This study has shown that for companies in emerging African economies, it is not impossible to access the world's capital markets. The market has capital in abundance to fund opportunities in emerging economies as long as the return on capital is commensurate with the risks associated with that capital. The market looks for returns in several ways, one of which is the present value of growth opportunities. The extractive industry in Africa is one that has immense growth opportunities; because of the lack of competition both international and domestic, the natural resources base of the region has not been fully tapped. The reasons for venturing into this region has for decades been tempered by the disproportionate amount of perceived risks associated with the region. This study has shown that the challenges facing an African company seeking access to the financial markets are not only : 1) the credible presentation of these growth opportunities and 2) the risk management strategies that accompany exploration of the growth opportunities.

A third component, particularly in the case of a gold mine, is the ability of management to deliver target output. To the extent that gold prices are valued as the present value of output discounted at the risk free rate, a decline in current output would inevitably lead to a shortfall in valuation. This study has shown that the financial strategy pursued by Ashanti is completely aligned with the growth opportunities it is vigorously pursuing. In fact the financial policies add value to Ashanti in every imaginable dimension. It is hard to identify additional measures that could improve the strategy. In addition it seems the mere cloud of Africa overhanging Ashanti is a cause for low-ball valuation, especially during times that a politically sensitive situation develops.

In spite of the success of the different financial strategies to signal growth opportunities, the study uncovered evidence that the discount levied on Ashanti returns are very sensitive to events in West Africa, particularly, for events that have a potentially destabilising political effect. More startling in fact is the trend that the discount on returns is growing by the day.

Being the first African company to subject itself to the scrutiny of international investors, perhaps Ashanti's focus has drifted away from operational activities to gear up the administrative systems necessary to service its new class of discerning shareholders. Nonetheless, if Ashanti should

succeed, it has to openly communicate its strategy for each country just as well as it communicates its financial strategies. This would prevent the market from lumping all events in the region together to mis-value Ashanti's operations.

The Ashanti Goldfields Corporation of Ghana seems to have found the right mix of ingredients to whet investors appetite for Africa. The evidence of increasing appreciation in the immense growth opportunities in Africa is on the Chicago Board of Options Exchange. The CBOE, the pioneer of listed options and the worlds largest market place, last April introduced trading in Ashanti's GDRs in anticipation that the company's aggressive exploration program would soon yield a huge return. Ashanti is in a unique position because it has the make-up of an indigenous African mining company with potential access to all the gold mines available in sub-Saharan Africa as it has no real competitor. The make-up of African management gives the company a better understanding of the motivational needs of the countries in which it operates and the staff that serve under the Ashanti logo. If Ashanti should succeed in its ambitions, we would, for the first time, see an African Multinational Corporation operating to the exacting demands of the international capital markets. This exciting possibility could bring the discipline of market economics in many unimaginable ways to the continent.

Exhibit 1: Map of Ghana and Obuasi

Exhibit 2: Range of Cost of Capital

<u>Index</u>	<u>b</u>	<u>Ke (%)</u>	<u>WACC (%)</u>
FTSE100	-0.16	0.047	0.054
Africa Gold Index	0.44	0.095	0.076
Global Gold Index	0.46	0.097	0.078
S&P500	0.12	0.070	0.056
Toronto	0.34	0.087	0.070
Portfolio	0.094	0.068	0.054
Industry Analyst			0.076*

Rf 6%

Rm 8%

Debt 20%

Equity 80%

Kd 8%

Tax 0%

Exhibit 3: Shareholder Information

Shareholder Information

<i>Size of Holding</i>	<i>Number of Shareholders</i>	<i>% of total holdings</i>
1 -100	29,412	90.7
101 -500	2,304	7.1
501 -1000	352	1.1
1001 -5000	251	0.8
5001 -10,000	42	0.1
10,001 and over	70	0.2

(20 Largest ordinary shareholders represent 96.5% of issued ordinary shares)

* Interview with HBSC James Capel African Mining Analyst January 15, 1997

Exhibit 4: Ashanti Goldfields Corporation Tombstone of syndicate banks

JAMES CAPEL & CO
GLOBAL BOOKRUNNER

MORGAN GRENFELL & CO. LIMITED
FINANCIAL ADVISOR

A GLOBAL OFFERING

COMPRISING

THE INTERNATIONAL OFFER

JAMES CAPEL & CO.

MORGAN GRENFELL & CO LIMITED

MERRILL LYNCH INTERNATIONAL LIMITED

DAIWA EUROPE LIMITED

PARIBAS CAPITAL MARKETS

UBS LIMITED

BURNS FRY LIMITED

CREDIT LYONNAIS SECURITIES

FLEMING MARTIN

GOLD COAST SECURITIES

ING BANK

LEHMAN BROTHERS

NIKKO EUROPE PLC

PAINWEBBER INTERNATIONAL

**J. HENRY SCHRODER WAGG
& CO. LIMITED**

**SOCIETE GENERAL STRAUSS
TURNBULL SECURITIES LIMITED**

SWISS BANK CORPORATION

S.G. WARBURG SECURITIES

AND

THE GHANAIAN OFFER

ECOBANK GHANA LIMITED

MERCHANT BANK (GHANA) LTD

Exhibit 5: Financial Statements

**ASHANTI GOLDFIELDS COMPANY LIMITED
CONSOLIDATED PROFIT AND LOSS ACCOUNT
FOR THE YEAR ENDED 30 SEPTEMBER**

	1995 US\$ (m)	1994 US\$ (m)
Turnover	387.7	319.2
Operating costs	-213.6	-146.3
Royalties	-11.5	-9.5
Depreciation, amortization and depletion	-50	-43.5
Total costs	-275.1	-199.3
Operating profit	112.6	119.9
Share of earnings of associated undertakings	2	1.3
Profit on ordinary activities		
before interest	114.6	121.2
Commissions on issue of shares	-2	-
Deferred loan fees written off	5	-2.8
Interest receivable	4.9	1.8
Interest payable	-8.5	-10.6
Profit on ordinary activities		
before taxation	106.2	112.4
Taxation	-0.4	-0.5
Profit on ordinary activities		
after taxation	105.8	111.9
Minority interest	0.1	0.3
Profit before extraordinary items	105.9	112.2
Extraordinary items	-	-14.4
Profit attributable to shareholders	105.9	97.8
Dividends	-32.6	-21
Retained profit for the year	73.3	76.8
E.P.S. before extraordinary items (US\$)	1.22	1.33
E.P.S. after extraordinary items (US\$)	1.22	1.17
Dividends per share (*) (US\$)	0.375	0.25

(*) There were no discontinued operations during the year.

ASHANTI GOLDFIELDS COMPANY LIMITED
CONSOLIDATED/COMPANY BALANCE SHEETS

	1995		1994	
	US\$ (m) Group	Company	US\$ (m) Group	Company
Fixed assets				
Fixed property, plant and equipment	638.1	624.8	520.2	510.3
Investments in associated undertakings	6.1	9.1	4.5	7
	644.2	633.9	524.7	517.3
Current assets				
Stocks/inventories	81.2	79.5	56.1	54.5
Debtors/receivable	27.5	35.2	21	19
Cash	128.3	126	106.5	105.1
	237	240.7	183.6	178.6
Creditors/payable: amounts falling due within one year				
Current portion of long term loans	-2.4	-1.5	-43.3	-42.1
Trade and other creditors/payable	-50.4	-48.3	-35.7	-32.4
Dividends	-22.5	-22.5	-21	-21
Accruals and deferred income	-21.7	-21.2	-20	-19.9
	-97	-93.5	-120	-115.4
Net current assets	140	147.2	63.6	63.2
Total assets less current liabilities	784.2	781.1	588.3	580.5
Creditors: amounts failing due over one year				
Long term loans	-193.3	-191.4	-130.3	-123.5
Provision for liabilities and charges	-5.2	-5.2	-8.8	-8.8
	585.7	584.5	449.2	448.2
Capital and reserves				
Stated capital	150.3	150.3	88	88
Profit and loss account (income surplus account)	435.4	434.2	361.2	360.2
	585.7	584.5	449.2	448.2

**ASHANTI GOLDFIELDS COMPANY LIMITED
CONSOLIDATED CASH FLOW STATEMENTS
FOR THE YEAR ENDED 30 SEPTEMBER**

	1995 US\$ (m)	1994 US\$ (m)
Net cash inflow from operating activities	145.4	152.7
Returns on investments and servicing of finance		
Interest received	4.9	1.8
Interest paid	-7.1	-8.9
Dividends from associated undertakings	0.3	0.3
Dividend paid	-31.1	-14.6
Net cash outflow from returns on investments and servicing of finance	-33	-21.4
Taxation		
Corporate tax paid	-2.5	0
Investing activities		
Purchase of property, plant and equipment	-176.9	-125.4
Proceeds from sale of fixed assets	2.5	0.5
Net cash outflow on purchase of subsidiary and associated companies	-	-1.6
Net cash outflow from investing activities	-174.4	-126.5
Net cash inflow/(outflow) before financing	-64.5	4.8
Financing activities		
Proceeds from share issue	60.3	78
Expenses on issue of shares	-	-14.4
Loans drawn down	193	8
Loan repayments	-167	-21.1
Net cash inflow from financing activities	86.3	50.5
Increase in cash and cash equivalents	21.8	55.3

Exhibit 6: Stock returns and market indices

Date	Ash Rtn	Gbl Gld Inx Rtn	Afri Gld Rtn
22-Apr	0.00	0.00	0.00
29-Apr	0.11	0.13	0.07
06-May	-0.02	-0.09	-0.03
13-May	0.02	0.00	0.00
20-May	0.00	0.00	0.05
27-May	0.02	0.02	0.01
03-Jun	0.01	0.03	-0.01
10-Jun	-0.01	0.02	0.00
17-Jun	0.00	0.08	0.05
24-Jun	-0.05	0.00	-0.02
01-Jul	-0.07	-0.04	-0.03
08-Jul	-0.02	-0.02	-0.02
15-Jul	0.00	0.10	0.04
22-Jul	0.00	-0.06	0.00
29-Jul	0.00	0.03	0.01
05-Aug	0.00	0.01	-0.01
12-Aug	0.00	0.02	0.00
19-Aug	0.00	0.03	0.02
26-Aug	0.00	0.02	0.02
02-Sep	-0.01	0.05	0.06
09-Sep	0.00	0.03	0.03
16-Sep	0.01	0.00	-0.01
23-Sep	-0.01	0.04	0.07
30-Sep	0.00	0.01	0.00
07-Oct	0.00	-0.01	-0.03
14-Oct	0.12	0.00	-0.01
21-Oct	0.00	0.05	0.02
28-Oct	0.00	-0.03	-0.04
04-Nov	-0.01	-0.02	-0.02
11-Nov	0.02	-0.03	-0.02
18-Nov	-0.01	-0.03	-0.03
25-Nov	-0.03	-0.05	-0.04
02-Dec	-0.01	-0.04	-0.04
09-Dec	-0.02	-0.02	-0.01
16-Dec	0.01	0.00	0.00
23-Dec	0.00	0.06	0.02
30-Dec	0.00	0.02	0.03
06-Jan	0.03	-0.06	-0.08
13-Jan	-0.05	-0.05	0.02
20-Jan	0.04	-0.02	0.00
27-Jan	-0.01	-0.08	-0.07

Date	Ash Rtn	Gbl Gld Inx Rtn	Afri Gld Rtn
03-Feb	-0.01	0.05	0.00
10-Feb	0.01	0.01	0.00
17-Feb	-0.01	-0.02	0.00
24-Feb	0.02	0.03	0.02
03-Mar	0.00	-0.07	-0.03
10-Mar	0.02	0.09	0.07
17-Mar	0.01	-0.02	0.02
24-Mar	0.02	-0.06	-0.02
31-Mar	0.09	0.09	0.06
07-Apr	0.03	0.04	0.04
14-Apr	-0.01	-0.05	-0.03
21-Apr	0.01	0.01	0.02
28-Apr	-0.01	-0.02	-0.02
05-May	0.02	0.01	0.01
12-May	-0.04	-0.07	-0.06
19-May	0.00	-0.03	0.01
26-May	0.00	0.03	0.04
02-Jun	-0.08	0.01	-0.01
09-Jun	-0.01	-0.03	0.00
16-Jun	0.00	0.07	0.05
23-Jun	0.05	0.03	0.01
30-Jun	-0.02	-0.02	-0.04
07-Jul	-0.02	0.02	0.04
14-Jul	-0.02	0.00	0.03
21-Jul	-0.01	0.00	-0.02
28-Jul	0.00	0.00	-0.01
04-Aug	0.01	0.04	0.02
11-Aug	-0.04	0.00	-0.01
18-Aug	0.01	0.01	0.02
25-Aug	-0.01	-0.01	0.00
01-Sep	-0.02	-0.02	-0.03
08-Sep	-0.03	0.01	0.02
15-Sep	0.01	-0.01	0.00
22-Sep	0.00	-0.01	-0.02
29-Sep	0.00	-0.01	-0.01
06-Oct	-0.01	-0.02	-0.02
13-Oct	-0.03	-0.02	-0.02
20-Oct	0.00	-0.08	-0.05
27-Oct	0.00	-0.03	-0.06
03-Nov	-0.06	-0.01	0.02
10-Nov	0.05	0.12	0.07
17-Nov	-0.06	-0.05	-0.03
24-Nov	0.01	-0.05	-0.02

Date	Ash Rtn	Gbl Gld Inx Rtn	Afri Gld Rtn
01-Dec	0.01	-0.02	0.01
08-Dec	0.07	0.09	0.05
15-Dec	0.01	-0.04	-0.03
22-Dec	0.01	0.04	0.01
29-Dec	0.01	-0.01	-0.01
05-Jan	0.01	0.13	0.10
12-Jan	0.08	0.07	0.02
19-Jan	-0.02	-0.04	0.01
26-Jan	0.13	0.12	0.05
02-Feb	0.11	0.10	0.09
09-Feb	-0.11	-0.06	-0.05
16-Feb	0.03	-0.02	0.00
23-Feb	-0.04	-0.05	-0.03
01-Mar	-0.04	0.01	0.01
08-Mar	0.00	-0.05	-0.04
15-Mar	0.05	0.04	0.01
22-Mar	-0.01	0.00	0.01
29-Mar	0.02	0.01	0.01
05-Apr	-0.01	-0.05	-0.01
12-Apr	-0.08	0.02	0.02
19-Apr	-0.01	-0.01	-0.04
26-Apr	0.00	0.02	0.03
03-May	-0.02	0.00	0.00
10-May	0.03	0.02	0.03
17-May	-0.03	0.01	0.00
24-May	0.00	-0.03	-0.01
31-May	-0.05	0.01	0.03
07-Jun	-0.01	-0.05	-0.08
14-Jun	-0.14	-0.07	-0.03
21-Jun	0.07	0.00	-0.01
28-Jun	0.05	-0.02	-0.02
05-Jul	-0.01	0.04	0.02
12-Jul	-0.04	0.02	-0.01
19-Jul	-0.08	-0.05	-0.02
26-Jul	0.03	-0.03	-0.02
02-Aug	0.00	0.03	0.03
09-Aug	-0.01	-0.03	0.01
16-Aug	0.01	-0.02	-0.02
23-Aug	0.01	0.00	0.03
30-Aug	0.01	0.04	0.00
06-Sep	0.03	0.00	0.00
13-Sep	-0.04	-0.01	-0.01
20-Sep	-0.04	-0.02	-0.03

Date	Ash Rtn	Gbl Gld Inx Rtn	Afri Gld Rtn
27-Sep	0.01	-0.03	-0.02
04-Oct	-0.04	0.02	0.00
11-Oct	-0.05	-0.01	0.00
18-Oct	-0.05	-0.03	-0.02
25-Oct	0.04	0.01	0.02
01-Nov	0.02	0.01	-0.01
08-Nov	-0.03	-0.03	0.01
15-Nov	0.01	0.03	0.03
22-Nov	-0.06	-0.02	-0.02
29-Nov	-0.06	-0.08	-0.03
06-Dec	0.00	-0.01	-0.01
13-Dec	-0.03	-0.03	-0.02
20-Dec	-0.04	0.00	0.01
27-Dec	-0.05	-0.01	0.00
03-Jan	-0.02	-0.03	-0.04
10-Jan	-0.02	-0.03	-0.01
17-Jan	0.05	0.01	0.02

Exhibit 7: Regression results for country analysis model

Base Regressions for Market Model:

Global Gold Index

Source	SS	df	MS	Number of obs = 144
Model	.030476069	1	.030476069	F(1, 142) = 23.57
Residual	.183591364	142	.001292897	Prob > F = 0.0000
Total	.214067433	143	.001496975	R-squared = 0.1424
				Adj R-squared = 0.1363
				Root MSE = .03596

Ashanti	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
GGI	.4604866	.0948461	4.855	0.000	.2729938 .6479795
_cons	-.0026891	.0029971	-0.897	0.371	-.0086137 .0032356

Africa Gold Index

Source	SS	df	MS	Number of obs = 144
Model	.05209969	1	.05209969	F(1, 142) = 45.68
Residual	.161967742	142	.001140618	Prob > F = 0.0000
Total	.214067433	143	.001496975	R-squared = 0.2434
				Adj R-squared = 0.2381
				Root MSE = .03377

Ashanti	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
AGI	.4408327	.0652268	6.758	0.000	.3118916 .5697738
_cons	-.0021834	.0028146	-0.776	0.439	-.0077472 .0033805

FTSE 100

Source	SS	df	MS	Number of obs = 144
Model	.001493951	1	.001493951	F(1, 142) = 1.00
Residual	.212573481	142	.001496996	Prob > F = 0.3195
Total	.214067433	143	.001496975	R-squared = 0.0070
				Adj R-squared = 0.0000
				Root MSE = .03869

Ashanti	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
FTSE100	-.1601024	.1602655	-0.999	0.320	-.4769169 .1567121
_cons	-.0021451	.0032328	-0.664	0.508	-.0085358 .0042456

Regressions for Event Study #1: Election in Zimbabwe March 20, 1996

Source	SS	df	MS	Number of obs = 98
Model	.0241352	1	.0241352	F(1, 96) = 20.81
Residual	.111322804	96	.001159613	Prob > F = 0.0000
Total	.135458004	97	.001396474	R-squared = 0.1782
				Adj R-squared = 0.1696
				Root MSE = .03405

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.4546427	.0996555	4.562	0.000	.2568282	.6524573
_cons	.000821	.0034534	0.238	0.813	-.006034	.007676

date	Abnormal Rtn	tstat
08 Mar 96	.0155377	.4616812
15 Mar 96	.0436079	1.287377
22 Mar 96	-.0145417	-.429264
29 Mar 96	.0149511	.4414272
05 Apr 96	-.0056576	-.1671524

Regressions for Event Study #2: Elections in Chad, June 2, 1996

Source	SS	df	MS	Number of obs = 109
Model	.023569465	1	.023569465	F(1, 107) = 20.36
Residual	.123874474	107	.001157705	Prob > F = 0.0000
Total	.147443938	108	.001365222	R-squared = 0.1599
				Adj R-squared = 0.1520
				Root MSE = .03403

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.4395346	.0974131	4.512	0.000	.2464246	.6326446
_cons	.000172	.0032721	0.053	0.958	-.0063144	.0066585

date	Abnormal Rtn	tstat
24 May 96	.0058616	.17326
31 May 96	-.0659502	-1.95412
07 Jun 96	.0243574	.74235
14 Jun 96	-.1257454	-3.73259
21 Jun 96	.0738555	2.18156

Regressions for Event Study #3: Elections in Ghana, December 7, 1996

Source	SS	df	MS	Number of obs = 135
Model	.026643378	1	.026643378	F(1, 133) = 20.46
Residual	.173209743	133	.001302329	Prob > F = 0.0000
				R-squared = 0.1333
				Adj R-squared = 0.1268
Total	.199853121	134	.001491441	Root MSE = .03609

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.4361878	.096436	4.523	0.000	.2454411	.6269345
_cons	-.0015145	.0031088	-0.487	0.627	-.0076635	.0046346

date	Abnormal Rtn	tstat
22 Nov 96	-.0521336	-1.45247
29 Nov 96	-.0453475	-1.26456
06 Dec 96	.0039421	.10966
13 Dec 96	-.01775	-.49432
20 Dec 96	-.0370922	-1.03171

Regressions for Event Study #4: Tribal War in Ghana, May 10, 1995

Source	SS	df	MS	Number of obs = 53
Model	.004020269	1	.004020269	F(1, 51) = 4.36
Residual	.046987582	51	.000921325	Prob > F = 0.0417
				R-squared = 0.0788
				Adj R-squared = 0.0608
Total	.051007852	52	.00098092	Root MSE = .03035

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.2598187	.1243797	2.089	0.042	.0101162	.5095213
_cons	.0042121	.0041783	1.008	0.318	-.0041762	.0126003

date	Abnormal Rtn	tstat
28 Apr 95	-.0044073	-.14716
05 May 95	.0090545	.30123
12 May 95	-.0275207	-.94937
19 May 95	-.0076857	-.25590
26 May 95	-.0134861	-.45292

Regressions for Event Study #5: LA Times Story on Ghana, July 22, 1995

Source	SS	df	MS	Number of obs = 63
Model	.005910833	1	.005910833	F(1, 61) = 6.37
Residual	.056571707	61	.000927405	Prob > F = 0.0142
Total	.06248254	62	.001007783	R-squared = 0.0946
				Adj R-squared = 0.0798
				Root MSE = .03045

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.2904323	.1150417	2.525	0.014	.0603922	.5204723
_cons	.0022438	.0038411	0.584	0.561	-.0054369	.0099246

date	Abnormal Rtn	tstat
07 Jul 95	-.0342266	-1.14236
14 Jul 95	-.0268612	-.89370
21 Jul 95	-.00178	-.05915
28 Jul 95	.0010718	.03552
04 Aug 95	-.0034152	-.11347

Regressions for Event Study #6: LA Times Story on Ghana, July 12, 1995

Source	SS	df	MS	Number of obs = 62
Model	.005592456	1	.005592456	F(1, 60) = 5.94
Residual	.056524888	60	.000942081	Prob > F = 0.0178
Total	.062117344	61	.001018317	R-squared = 0.0900
				Adj R-squared = 0.0749
				Root MSE = .03069

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ggirtn	.2862232	.1174756	2.436	0.018	.051237	.5212094
_cons	.0023614	.0039071	0.604	0.548	-.005454	.0101769

date	Abnormal Rtn	tstat
30 Jun 95	-.0069882	-.232746
07 Jul 95	-.0341958	-1.132425
14 Jul 95	-.0268603	-.886693
21 Jul 95	-.0019895	-.065631
28 Jul 95	.0009061	.029805

Regressions for Event Study #7: Elections in Botswana

Source	SS	df	MS	Number of obs =	27
-----+-----				F(1, 25) =	2.03
Model	.002644503	1	.002644503	Prob > F =	0.1663
Residual	.032515016	25	.001300601	R-squared =	0.0752
-----+-----				Adj R-squared =	0.0382
Total	.035159518	26	.001352289	Root MSE =	.03606

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
ggirtn	.3371736	.2364577	1.426	0.166	-.1498202	.8241673
_cons	.0004873	.007305	0.067	0.947	-.0145576	.0155321

date	Abnormal Rtn	tstat
28 Oct 94	.0141098	.4262431
04 Nov 94	.0007919	.0228323
11 Nov 94	.0223212	.6408892
18 Nov 94	.0050203	.1478405
25 Nov 94	-.0142794	-.4327863

Regressions for Event Study #8: Ebola Virus in Zaire

Source	SS	df	MS	Number of obs =	52
-----+-----				F(1, 50) =	4.30
Model	.004040844	1	.004040844	Prob > F =	0.0432
Residual	.04696683	50	.000939337	R-squared =	0.0792
-----+-----				Adj R-squared =	0.0608
Total	.051007674	51	.00100015	Root MSE =	.03065

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+-----						
ggirtn	.2612845	.1259761	2.074	0.043	.008254	.514315
_cons	.0042959	.0042564	1.009	0.318	-.0042534	.0128452

date	Abnormal Rtn	tstat1
21 Apr 95	-.0046133	-.1524799
28 Apr 95	-.004463	-.1476011
05 May 95	.0089598	.2952718
12 May 95	-.0275137	-.939994
19 May 95	-.0077891	-.2569175

Regressions for Event Study #9: Hanging of Saro Wiwa

Source	SS	df	MS	Number of obs =	79
-----+				F(1, 77) =	6.64
Model	.005383568	1	.005383568	Prob > F =	0.0119
Residual	.062393233	77	.000810302	R-squared =	0.0794
-----+				Adj R-squared =	0.0675
Total	.067776802	78	.000868933	Root MSE =	.02847

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+						
ggirtn	.261518	.1014588	2.578	0.012	.0594877	.4635483
_cons	-.0000994	.0032036	-0.031	0.975	-.0064785	.0062798

date	Abnormal Rtn	tstat
27 Oct 95	.0162849	.59085
03 Nov 95	-.0636763	-2.25926
10 Nov 95	.0361581	1.31990
17 Nov 95	-.0576866	-2.04869
24 Nov 95	.0109585	.38815

Regressions for Event Study #10: Murder of Abiola Senior Wife

Source	SS	df	MS	Number of obs =	109
-----+				F(1, 107) =	20.36
Model	.023569465	1	.023569465	Prob > F =	0.0000
Residual	.123874474	107	.001157705	R-squared =	0.1599
-----+				Adj R-squared =	0.1520
Total	.147443938	108	.001365222	Root MSE =	.03403

ashrtn	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
-----+						
ggirtn	.4395346	.0974131	4.512	0.000	.2464246	.6326446
_cons	.000172	.0032721	0.053	0.958	-.0063144	.0066585

date	Abnormal Rtn	tstat1
24 May 96	.0058616	.17326
31 May 96	-.0659502	-1.95412
07 Jun 96	.0243574	.74235
14 Jun 96	-.1257454	-3.73259
21 Jun 96	.0738555	2.18156

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