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# ALTERNATIVES TO THE FIXED RATE MORTGAGE INSTRUMENTS FOR EGYPT

EGYPT FINANCIAL SERVICES PROJECT  
TECHNICAL REPORT #75

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## DATA PAGE

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KRA: KRA 1. 11 Effective Long – Term Funding Structures Improved

Activity: Activity 1.11.1 Design and Identify Potential Real Estate Financing products and Related Investment Vehicles

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## Executive Summary and Introduction

In late 2006, a very narrow range of mortgage loan products was available to Egyptian dwelling purchasers. Indeed, the tri-partite agreement mandated under the law was the only type of mortgage officially sanctioned. This is a fixed rate, self-amortizing mortgage. The monthly payments are the same over the life of the loan, although the share of the total payment going to principal rather than interest payments steadily increases. Payments to principal are deducted from the outstanding balance every month and the interest due computed based on the new balance. Some lenders are quietly using other contracts but the loans are still of this basic type.

Broadening the range of products makes sense so that borrowers' different needs and opportunities can be met. Lenders and financiers may also have special considerations. Consider the following three examples.

- A graduated payment mortgage—one that starts with a comparatively low interest rate that is then increased over the first few years of the loan raises the size of the loan the borrower can take because of the lower starting interest rate. This instrument is suitable for young families with good income growth prospects but not for others.
- Some borrowers may be opposed to any financing scheme that relies on interest to reward those providing the finance; instead they want to follow Islamic practices and have the financier be a partner with the family purchasing a dwelling, a partner who shares the risks and the rewards of the home purchase. Egypt's tripartite agreement is Sharia compliant.
- A very effective way for lenders to manage their interest rate risk—the risk that mortgage assets and the liabilities used to finance them and reprice at different intervals—is to use variable rate loan instruments rather than fixed rate ones. In effect, this shifts the risk from the lender to the borrower, and in exchange the borrower gets a lower interest rate under the variable rate contract than he does under the fixed rate contract.

This paper presents the principal alternative mortgage instruments (AMIs) that are offered in various markets around the world as a first step in a process to widen the range of products available in the Egyptian market. The paper covers both standard western products and Islamic compliant products.

The paper proceeds in two parts. Part 1 devoted to western instruments and Part 2 to Islamic compliant instruments. In each part several instruments are described with respect to their structure and to the relative risks to lenders and borrowers of using each instrument relative to the familiar fixed-rate mortgage. Comprehensive summary tables are provided in each part.

Consideration of a range of western mortgage instruments led to the conclusion that three instruments should be given priority introduction in Egypt. Two are variable instruments, which we term the adjustable rate mortgage (ARM), and the roll-over mortgage.

With the "basic ARM" the principal advantage is that it allows lenders to shift interest rate risk very substantially to borrowers. The interest rate on the mortgage loan re-prices each 6 to 12 months. It is worth noting that international experience suggests that consumer acceptance

may be low because of aversion to relatively frequently changing payments and general uncertainty.

With a roll-over mortgage, with the interest rate fixed for 3 to 5 years, consumer acceptance is greater than under the basic ARM. While interest rate protection for the lender is less than under the basic ARM, it is still substantial.

The graduated payment mortgage works as described in the example above. It is very likely to prove popular with upwardly mobile young households. It is essential, however, that lenders exercise greater care in underwriting these loans to avoid excessive risks of default.

Turning to Sharia compliant instruments, analysis of the Egyptian legal framework for home purchase lending indicates that, for some of these instruments, issues exist with respect to ownership transfer to the purchaser. Taking this into account, three of the Islamic mortgage instruments included in this study--Murabaha, Ijara Wa Iqtina, Musharaka Mutanaqisa--can be introduced to the housing finance sector until legal issues related to transfer of ownership are being considered by the mortgage market.

These three instruments are widely used in global markets and the demand for Islamic mortgage is increasing. Thus, it is expected that there will be a substantial appetite for those products in the Egyptian market

## 1. Alternative Western Mortgage Instruments

Over the past 20 years, western financiers have developed a truly vast array of alternatives to the standard fixed-rate mortgage (FRM). Examples of the more recent, and, to some extent, more dangerous instruments follow.

- A borrower can now take out an “interest only” loan where he makes payments only for interest due, none to pay down the loan principal. This helps the borrower take a bigger loan than he otherwise could, with the idea being that he will eventually have more income and be able to make larger payments.
- Also offered now is the “flexible mortgage” contract that gives the borrower a great deal of freedom in setting the size of his actual payment month-to-month. If the borrower pays less than the nominally due amount, the extra is added to the loan principal and a higher payment is due the following month, although the borrower may not actually pay the higher amount.

Both of these instruments entail much greater credit risk—the risk that the borrower will default on the loan—than conventional FRM loans. In both cases the borrower’s equity in the property is likely to be low: in the interest-only loan, equity starts at zero; and, under the flexible loan, equity can decline sharply if house prices are increasing slowly and the borrower is not making full payments. The cardinal rule in predicting default is that lower equity increases the probability of default.

This section considers a group of fairly standard mortgage products that, in principle, could be introduced in Egypt where most consumers are not financially sophisticated.

Table 1 summarizes four product types, in addition to the standard fixed-rate mortgage considered:

- adjustable rate mortgages
- affordability enhancing mortgages
- AMIs for inflationary environments
- income generators

Each mortgage type is represented by 2-3 examples of concrete instruments currently being offered in some countries. The entries in the table provide a commentary comparing each instrument with the fixed-rate mortgage with respect to the instrument’s impact on the borrower’s affordability (the size of loan that can be supported with the same monthly payment) and the lender’s ability to manage the various risks associated with mortgage loans. The following sections briefly discuss each of the five types but they do *not* repeat all the information in the table.

**Table 1: Summary of Alternative Mortgage Instruments**

Name	Description	Impact Relative to Fixed Rate Mortgage (FRM)		Comment
		Affordability	Risk management	
<i>Adjustable Rate Mortgages</i>				Shifting interest rate risk to borrowers is critical for extending the term of loans to 10 years and more.
Basic ARM	Mortgage interest rate is indexed to a published index for mid-term loans or to lenders cost of funds (COFI). Adjustments are semi-annual to annual.	Since interest rate is shifted to the borrower, the loan rate is lower than for the FRM. <sup>a</sup>	Eliminates interest rate risk for the lender, but increases credit risk that is increased when interest rates and monthly payments rise.	Type of instrument with frequent adjustments is not used in very many countries. For this and other ARM products there may be considerable consumer resistance.
ARMs with Caps	Same as the Basic ARM except that there are limits to the increases in rates that can be passed through to the borrower. A typical set of limits is 1 percentage point per year and 5 percentage points above the initial rate over the life of the loan.	The interest rate reduction to the borrower is smaller because he does not take the full risk.	The lender bears some of the interest rate risk (which is above the limits), but credit risk is correspondingly reduced.	Loans with limits are much more popular with borrowers than those without them.
Roll-Over Mortgages	Interest rates are adjusted at the end of longer periods (1-5 years) of a longer amortization period (e.g., 15 years); new rate is the rate then being offered by the lender on new loans. Borrowers must agree to the new rate or find other financing.	Because of the longer time period between the re-pricing of lenders' liabilities and mortgages than under Basic ARMs, interest rates effects are smaller than for Basic ARMs.	Lenders bear some interest rate risk because of the extended time possible between the re-pricing of liabilities and assets.	Basic mortgage instrument in many countries including U.K., Germany, Canada, and several Eastern European countries.
<i>Affordability Enhancing</i>				
Graduated Payment Mortgage (GPM)	Payments are initially set low to increase a borrower's loan amount with the standard payment-to-income ratio. Payments rise as the borrower's income is expected to increase. <sup>b</sup> Typical products increase payments at 2 to 5% per year over the first 5 to 10 years of the loan.	Can have major impact on affordability.	Credit risk increases because the borrower's income may not rise as rapidly at the required loan payments. Involves a modest amount of negative amortization that could on a large volume of such loans expose the lender to greater liquidity risk.	Targeted on upwardly mobile, young borrowers. Has not gained wide acceptance, but is a niche product in many markets including U.S. and India.

Shared Appreciation Mortgage (SAM)	Under a SAM the lender charges a lower interest rate in exchange for a share of the appreciation in the dwelling's value. The lender's share has been as much as 40%. The interest rate reduction is tied to the lender's estimate of future property appreciation.	Impact can be substantial over the period of the SAM.	Increased credit risk is possible. When the sharing period is over, and if the borrower does not sell the unit, then he must have the cash to pay the lender or take out another loan. In the case that the initial loan period is not over but the sharing period is finished, the borrower could have two payments in effect.	More widely accepted in commercial than in residential finance. Consumer take-up is modest. Complications are possible when property values do not appreciate rapidly. Some acceptance in U.S. and U.K., more popular when housing values rising briskly. Probably too complex for Egypt.
<i>Instruments for Inflationary Environments</i>				These instruments are generally used where inflation is running at a minimum of 25-30% per year.
Price-Level Adjusted Mortgage (PLAM)	The contract rate is fixed for the life of the loan, but mortgage balance is indexed by some measure of inflation, such as the CPI. Each month the real interest rate is applied to the new balance.	Very large. The contract rate is usually taken as "real interest rate" <sup>c</sup> that is typically much lower than rates of fixed rate loans.	Credit risk increases because it is possible that borrowers' ability to pay does not increase with inflation. Negative amortization can also contribute to problems managing liquidity.	Instrument has been very popular in inflation-prone Latin American countries.
Dual Index Mortgage (DIM) <sup>d</sup>	The DIM employs the same structure as the PLAM to determine the mortgage payment in principle. But the payment actually due is determined by indexing the initial mortgage payment by a wage index. It is possible for the two indexes (e.g., CPI and wage) not to move together and then adjustments must be made to the loan period.	Essentially the same as for the PLAM.	Credit risk increases substantially when the wage index rises at a lower rate than the inflation index, either for an extended period of time or when there is a sudden jolt of inflation, such as under currency devaluation. This can produce a situation of mass defaults, with lenders forced to accommodate lengthy work outs, typically costing them a lot of money. Negative amortization can also be a problem.	The DIM has been proven not to work very well in practice, with Mexico being the prime example. The instrument was not accepted by lenders in Poland when introduced there in the early 1990s.
Dual Rate Mortgage (DRM) <sup>d</sup>	The two rates used are the <i>contract rate</i> , i.e., the rate used to compute the borrower's monthly liability, and the <i>payment rate</i> , the rate used to compute the payment actually due. Differences in the monthly payments between the two rates are added to the loan principal and the loan recast quarterly (or another interval) holding	Similar to the PLAM.	Credit risk increases because it is possible that borrowers' ability to pay does not increase with inflation. Involves substantial negative amortization that could, on a large volume of such loans, expose the lender to significant liquidity risk.	Because of its complexity it has not been used much. Hungary used it in the mid-1990s.

	the amortization period constant, i.e., the loan closes on schedule.			
<i>Income Generators</i>				
Reverse Annuity Mortgages (RAM)	RAMs are more of a retirement annuity than a traditional mortgage. A RAM allows a homeowner to draw down the equity on his home, usually during retirement. The standard form is a steady stream of payments from the lender to the owner, either for a specified period of time or as a "life annuity."	Not applicable.	The lender can have very substantial credit risk. Under a fixed period annuity, the unit must be sold to pay off the loan when the term is up. Courts can be reluctant to enforce foreclosure. Under a life time annuity the bank sells the dwelling after the person dies or moves out. If the bank underestimates the number of years the borrower lives, it may well suffer a loss.	While attractive in principle, this instrument has not gained wide acceptance anywhere, although it has been heavily promoted in the U.S. On the other hand, "home equity loans" that pledge the property for cash payments are very popular. There is not yet much experience with foreclosure of elderly persons. Not a good instrument for Egypt with its untested foreclosure process.

- a. See table 2 for an example of the interest rate reductions for the U.S.
- b. The difference between the amount paid in the early years, and the amount owed under the interest rate applicable for the loan, is added each month to the loan principle and the payment amount recalculated while holding the loan term constant.
- c. Often approximated as the observed interest rate minus the inflation rate.
- d. This instrument is described further in the annex.

## 1.1 Adjustable Rate Mortgages (ARMs)

As the title indicates, the interest rate of these mortgages is variable, rather than fixed, over the life of the loan. The borrower takes some or all of the interest rate risk and in exchange receives a lower interest rate on his mortgage. This is critical for lenders to extend the term of the loan to 10 years or more, particularly in the absence of a well-developed secondary mortgage market.

Members of the ARM family are distinguished by two attributes: (a) the frequency of rate adjustment, and (b) the basis for the new rate—either the rate is tied to a published index of loan interest rates or lenders' cost of funds (COFI), or it is the bank's current lending rate at the time of the adjustment. In all cases the amortization period remains constant when the rate is changed.

The most widely employed ARMs are those that re-price at 3 or 5 year intervals, with the new interest rate being that currently being offered by the lender on new loans. These are often called roll-over mortgages.

Tables 2 and 3 illustrate the size of the interest rate discount lenders have been prepared to give on different ARMs at different points in time. Table 2, for ARMs with an annual or semi-annual interest rate re-set in the U.S., shows that lenders gave very large discounts in 1992 when they clearly expected interest rates to rise substantially and to be sustained at the higher level.<sup>1</sup> Table 3 for 2006 interest rates for Canadian roll-over loans, shows how the interest rate offered varies with the length of the period between re-pricing. The very small difference with the increasing time period suggests that there is a great deal of uncertainty in Canada about the future direction of interest rates.

**Table 2: Pricing in the U.S. Over Time**

Date	15-year fixed rate	Variable rate	Diff in BP
11/92	7.75%	5.17%	258
11/95	6.97	5.67	130
11/98	6.50	5.48	98
11/01	6.04	5.26	78
11/04	5.08	4.00	108

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<sup>1</sup> Annual rate adjustments are now the industry standards in the U.S., but significant minorities of ARMs are adjusted semi-annually.

**Table 3: Interest Rates on Canadian Roll-Over Mortgages, November 2006\***

<b>Years before rate Re-set</b>	<b>Interest rate</b>
1	6.40
2	6.50
3	6.55
4	6.55
5	6.60
6	7.15

\* 15 year loan

The advantage to the lender of shifting the interest rate substantially or fully to the borrower is offset to some extent by increased credit risk that results from some borrowers being unable to pay the higher monthly amounts due when interest rates rise. This can particularly be a problem when there is a short-term surge in rates.

### **1.2 Affordability Enhancing Loans<sup>2</sup>**

The objective of these instruments is to increase the size of the loan a borrower can take when devoting a fixed amount of its income to monthly loan payments. The Graduated Payment Mortgage (GPM) is used in a number of countries in various regions. In all cases the product is aimed at young families whose incomes are expected to experience above-average increments over the next 5 to 10 years. For those families making loans that involve comparatively low initial monthly payments and steadily increasing monthly payments.

More specifically, loan payments begin from an initially lower level and step up or graduate by 2 to 5 percent per year over the first 5 to 10 years of the loan. The difference between the amount due under the contract interest rate and the lower rates in effect during the first years is added to the loan principal that is amortized over the remaining loan period. Hence, the payments in the later years are greater than they would be under a fixed-rate mortgage with the same note rate.

The increased credit risk and modest negative amortization associated with GPMs has proven fairly easy to manage.

Under the shared appreciation mortgage (SAM) the borrower pays a lower interest rate in exchange for sharing the expected appreciation in the value of the property purchased with the lender. For example, a lender could lower interest rate from 13 to 10 percent in exchange for 40 percent of the appreciation realized after 10 years. The size of the interest rate discount depends on the expected appreciation rate and on how large a share of the appreciation is assigned to the lender.

Significant negative amortization is present with SAMs, computed as the difference in monthly payments calculated on the principal applying the lender's usual rate and the

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<sup>2</sup> Instruments in this and the following two sections described more fully in P.R. Goebel and N.G. Miller, *The Complete Guide for Mortgage Mathematics*. Englewood Cliffs, NJ: Prentice-Hall, 1991.

discounted rate. If the borrower moves before the due date for the lender to collect its share of the appreciation, there is no “collection problem.” However, if the borrower does not move, then he must at the time specified in the contract (10 years, in the above example) pay the lender its share of the appreciation. This is likely to mean taking out another loan. If the borrower is still making payments on the initial loan, the credit risk will increase because he will now be making payments on two loans.

This is likely not a good instrument for Egypt today. The reasons are the relative complexity of the instrument and the potential for problems in foreclosing a loan where the appreciation payment due has been missed but the loan payments themselves are current.

### **1.3 *Instruments for Inflationary Environments***

This family of instruments was invented for economies with consistently high inflation rates—over 25 percent per year. They operate by deferring some of the payments that would be due in the early years of the mortgage contract under a FRM to later years. Since market interest rates are charged throughout, the discounted present value of the loans are equivalent to the loan principal, i.e., lenders do not lose money despite the substantial negative amortization involved.

Since Egypt enjoys a lower level of inflation, and because these instruments have proven difficult for lenders to interest consumers in less inflationary environments due to their complexity, they are not discussed further here. Some are described in Annex 1.

### **1.4 *Income Generators***

In contrast to using a mortgage as a vehicle for home purchase, this AMI group permits the owner to take equity out of his home in a systematic way. Reverse Annuity Mortgages (RAMs) are more of a retirement annuity than a traditional mortgage. A RAM allows a homeowner to draw down the equity in his home, usually during retirement. The target for such loans are the “home equity rich – cash poor” elderly, particularly persons living alone. The standard form is a steady stream, typically monthly, of payments from the lender to the owner, either for a specified period of time or as a “life annuity.” The borrower does not make payments during the life of the loan. Rather, the property is sold to satisfy the loan principal and accrued interest due to the lender.

The lender can have very substantial credit risk with these loans. Under a fixed period annuity, the unit must be sold to pay off the loan when the term is up. Courts can be reluctant to enforce foreclosure of an aged widow’s home. Under a life time annuity the bank sells the dwelling after the person dies or moves out. If the bank underestimates the number of years the borrower lives, it may well suffer a loss. In principle, gains (under early deaths) and losses should balance out. But if the portfolio of such loans is small, this expected result may not occur.

Many countries have enacted enabling legislation for these instruments, in part motivated by lowering their own support in meeting the elderly’s needs. Pioneered in the U.S., they are available in countries as diverse as the U.K., Korea, China, and Russia. But consumer take-up has been low, with the elderly demonstrating a strong aversion to giving up this asset and a secure place to live. These products may have some appeal

in Egypt but it seems wise to defer action on them until the primary market for home purchase mortgages has been more firmly established.

### 1.5 Conclusions

The foregoing suggests three AMIs that could be introduced into the Egyptian market at the present time, to the advantage of lenders and borrowers.

1. **Basic ARM**—its principal advantage is that it allows lenders to shift interest rate risk to borrowers. It seems appropriate for the index to be lenders' cost of funds. It seems likely that the CBE could readily develop a cost of funds index (COFI) for this purpose.<sup>3</sup> International experience suggests that consumer acceptance may be low because of aversion to relatively frequently changing payments and general uncertainty. Both can be overcome to some extent by pricing the loans attractively.
2. **Roll-Over Mortgage**—with the interest rate fixed for 3 to 5 years, consumer acceptance is greater than under the Basic ARM. While interest rate protection for the lender is less than under the Basic ARM, it is still substantial. International experience shows a greater degree of popularity for this instrument than the Basic ARM. No new index is needed.
3. **Graduated Payment Mortgage (GPM)**—this version of the FRM addresses the inability of young, upwardly mobile borrowers to purchase the size and quality unit they prefer because it relieves the short-term constraint on their purchasing power. The defined graduated increases in monthly payments are defined in the contract and permit the household to plan for the higher payments.

Introducing these will likely require several steps: discussing these instruments with lenders to insure that there is likely to be market acceptance; determining what legal changes may be needed to introduce them and getting these done; and, developing additional information on each instrument, including the applicable formulas, to share with interested lenders. MFCs in selecting mortgage servicing software should be sure the packages can handle these instruments.

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<sup>3</sup> One of the most commonly used indexes in the US is the COFI published by the 11<sup>th</sup> District [California] Federal Home Loan Bank. There has been a good deal of analysis of the performance of this index in managing interest rate risk.

## **2. Sharia Compliant Instruments**

This section examines the Islamic mortgage compliant instruments that can be introduced in the Egyptian market. The first part gives a brief introduction about the demand for Islamic products in the mortgage market worldwide and also introduces two important concepts in Islamic finance, Riba and Return.

The second part covers the three instruments examined in the report (Murabaha, Ijara Wa Iqtina, and Musharaka Mutanaqisa) and addresses relevant implementation.

The third part of the report presents the recommendations made by EFS Task 1 team.

In the fourth section a summary matrix is provided for the three referenced Islamic mortgage instruments with special focus on the relevant risks of each. Annex 2 covers other forms of Islamic Instruments, namely Buy-to-Let and Istisna, which can be further studied if implementation in the local market is required.

### **2.1 *An Initial Overview***

The growing demand for Islamic mortgages worldwide urged an answer from financial entities and institutions. In developed countries like the US and the UK, Islamic compliant mortgage instruments were created to satisfy the needs of the Muslim communities. Islamic principles prohibit the use of interest (Riba) in any transaction and stress the principle of profit and risk sharing. The main difference between Islamic mortgage and commercial mortgage is that the former is equity-based and the latter is debt-based.

In this paper, different forms of Islamic compliant instruments will be introduced:

- Murabaha
- Ijara Wa Iqtina
- Musharaka Mutanaqisa

Such instruments are used in the U.S., U.K., U.A.E., and K.S.A. markets. Some examples of real-life applications will be shown throughout this paper.

The strategic role of this paper is to:

1. Develop an overview of Shariah compliant mortgage products that would satisfy the needs and attract millions of motivated homebuyers;
2. Identify implementation concerns in the Egyptian local market.

Before introducing the Islamic Shariah compliant instruments, we have to introduce two important concepts, which are:

- RIBA; and
- Return in Islamic finance.

### **2.1.1 RIBA**

Technically, RIBA or “usury” refers to the premium that must be paid by the borrower to the lender along with the principle amount as a condition for the loan or for an extension in the duration of a loan. Usury is an increase in the capital, and as per the legislation interpretation rule (every loan generating a benefit is deemed usury) and usury is forbidden according to the Qur'an verse "But God has permitted trade and forbidden usury," Baqara Soura, verse 27. Shariah scholars prohibit the act of exchanging money to money as well as any additional charges associated with delay in payments.

In general, interest is found to be the act of lending and taking back what was lent with a premium and also having the right to extend credit for extra payments; that is why it is generalized to be RIBA.

Originally, the word money in Shariah refers to gold and silver (Al Nakdain). If A lends five golden coins to B at a certain time, B should pay back five gold coins. If B pays back the five coins (or the equivalent in bank notes) after 5 years, it will not matter then if the number of banknotes (Aowrak Nakdeia) equivalent to the 5 golden coins at the time of full payment exceeds the number of the banknotes equivalent to the five golden coins five years earlier. As long as the five golden coins, not more, are back, there is no RIBA.

### **2.1.2 Return in Islamic Finance**

Return occurs in Islamic finance through profit of an investment, trade, or any commercial activity. It is mainly executed by equity contracts (like Mudarabah and Musharaka) or through debt contracts (like Murabaha). In the case of equity contracts, the return on investment is the profit that the Islamic Financial Institution makes. In debt contracts like Murabaha, return is made through a contract of sale which is basically an activity of trade or a commercial activity.

However, our research proved that profit in both contracts is mostly benchmarked by prevailing interest rates, as it is the basic way, available so far, to assess the profitability of Islamic Institutions compared to conventional ones.

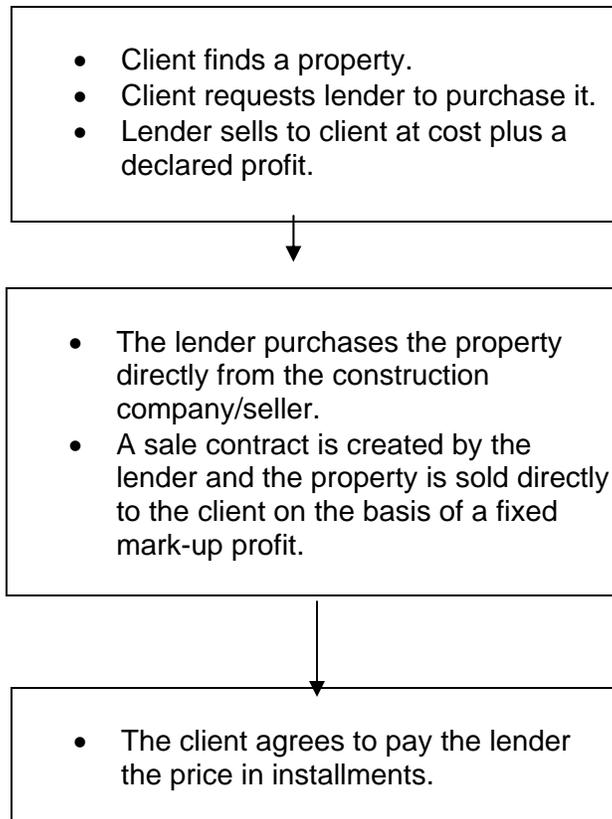
## **2.2 Islamic Mortgage Shariah Compliant Instruments**

### **2.2.1 Murabaha**

#### **Definition**

The Murabaha instrument is based on the principle of buying and selling goods at cost plus a declared mark-up profit.

**Figure 1**



### **Description**

Murabaha sale contract starts when the buyer approaches the lender and requests to purchase a certain property. The lender purchases the property where the title of the property is transferred to his name upon signing the sale contract with the seller. The buyer, at this point, enters the deal and buys the property from the lender; this is when the title is transferred from the lender to the buyer's name. The next step is that the buyer pays a down payment to the lender and agrees to pay fixed installments over a specified period of time.

The sale price offered to the client is the price paid by the lender to the seller, plus the return that the lender pays its investors, risk allowances, plus administrative expenses and a profit margin. The return to investors is benchmarked by interest rates applicable at the time the sale contract is concluded and therefore, for comparative purposes, return in this context can be referred to as interest rates applied by commercial banks at the time of sale.

### **Example**

Murabaha installment plan can be derived by a simple example as follows:

Assuming a purchase price for a property of \$125,000, the down payment will be \$25,000, equivalent to 20% of the purchase price. The repayment term is 30 years (360 months) and the monthly payment is \$665.30.

These terms are disclosed in the sales contract offered by the lender to the client. However, the cumulative mark-up of \$139,508.90 realized throughout the contract implies an interest rate (rate of return) of 7% which is not disclosed in the terms of the contract, but can be computed based on the disclosed contractual obligations.

The calculation of the deferred sale contract is shown in Table 1 below.

**Table 4: Amortization Table**

Event	Payment	Interest (Mark-up)	Principal	Cumulative Interest	Loan Balance
Loan					\$100,000.00
Payment # 1	\$665.30	\$583.33	\$81.97	\$583.33	99,918.03
Payment # 2	665.30	582.86	82.45	1,166.19	99,835.58
Payment # 3	665.30	582.37	82.93	1,748.56	99,752.66
Payment # 4	665.30	581.89	83.41	2,330.45	99,669.24
Payment # 5	665.30	581.40	83.90	2,911.86	99,585.34
Payment # 359	665.30	7.69	657.61	139,505.04	661.44
Payment # 360	665.30	3.86	661.44	139,508.90	0.00

#### **Risk Management<sup>4</sup>**

The interest rate risk (rate of return) is high since the lender bears all the risks of changes in the market. The credit risk is dependant on which school the lender abides by.

#### **2.2.2 Ijara Wa Iqtina**

##### **Definition**

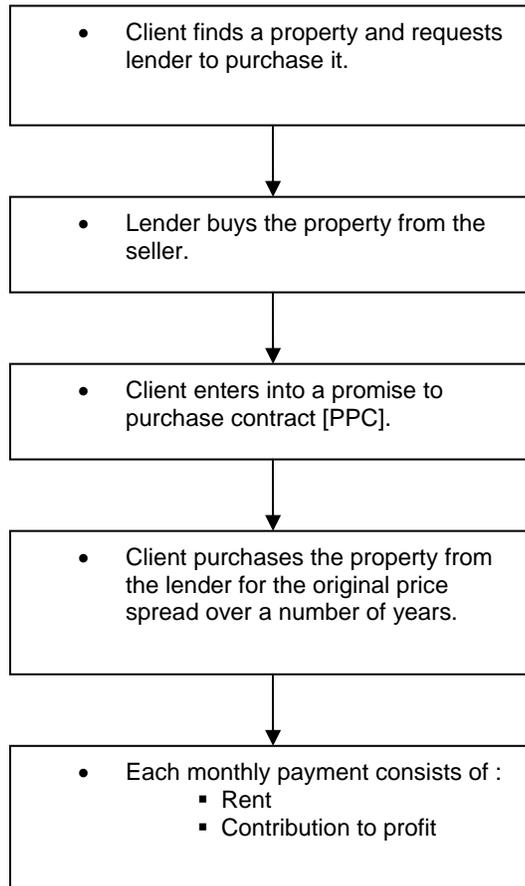
Ijara Wa Iqtina is defined as the rent of an asset until ownership (known as the Promise to Purchase model).

##### **Description**

The Ijara model starts with the lender buying the property from the seller. Afterwards, the client (buyer) enters into the Promise to Purchase Contract (PPC):

<sup>4</sup> Credit risk will be further discussed with more detail after all the instruments have been presented (refer to page 11).

**Figure 2**



Ijara Wa Iqtina Model starts with the client contacting the lender to purchase a specific property for him. The lender buys the property from the seller and the title is transferred to him. The client (buyer) then enters into a promise to purchase the contract where he purchases the property from the lender for the original price plus a return (interest) spread over a number of years. The title of the property is transferred to the buyer at the end of the contract when total installments are repaid.

### **Example**

A simple example of Ijara Wa Iqtina can be derived as follows:

Terms disclosed in the contract mentioning rate of return instead of interest rate.

- Purchase Price: \$110,000 (\$100,000 paid over 30 years on monthly installments & \$10,000 paid as a lump sum amount at Future Value (FV) at the end of 360 months)
- Interest Rate (Rate of Return): 7.5%
- Residual Value: \$ 87,550 (FV of \$ 10,000 which is deducted from the purchase price at the start of the period)

- Monthly payment: \$ 699.21(\$100,000 over 30 years @7.5%)
- Duration: 30 years (360 months)

**Table 5: Payment Table**

<b>PMT #</b>	<b>PMT</b>	<b>Final PMT</b>
1	\$699.21	
2	699.21	
120	699.21	
240	699.21	
360	699.21	\$87,550
	\$251,715.6	\$87,550

### **Risk Management**

The interest rate risk (rate of return risk) is borne by the lender because the payment is fixed for many years in the future and thus, the client is not exposed to it. The credit risk is less than in other instruments because the title of the property is transferred at the end of the lease duration. Also, the foreclosure laws would not be applied; instead eviction laws would be applied in the case of default.

### **2.2.3 Musharaka Mutanaqisa**

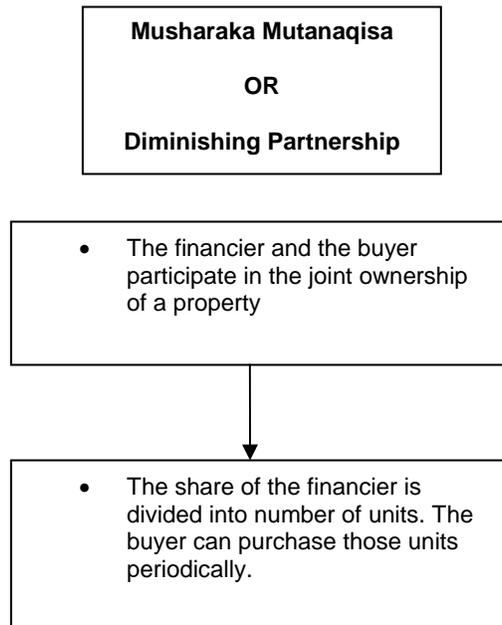
#### **Definition**

Diminishing Partnership is Musharaka Mutanaqisa; it is a form of partnership which ends with the complete ownership of the property to one of the partners who purchases the share of the other partner in the same property by a redeeming mechanism agreed upon between both of them.

#### **Description**

As indicated by the name, the ownership share of the financier (lender) diminishes over time as the buyer purchases a unit (share) with each monthly payment. The periodic payments can be divided into two parts; one paying a proportionate rental to the financier based on the financier's share of the property, and the other contributing equity to buy out the financier's share of the equity. Over time, the buyer is able to buy out the financier's share and thus, acquires complete ownership of the property.

**Figure 3**



**Example**

A simple example of Musharaka Mutanaqisa can be derived as follows:

Assuming a purchase price for the property of \$150,000, the first payment (down payment) will be \$30,000, equivalent to 20% of purchase price. The repayment term is 30 years with a fair monthly rental value of \$1000 (determined on market value and fixed over the repayment term). Applying the same percentage contribution of 20:80, client to lender, the lender's share in the monthly rent will start up at a total of \$800 and decreases over time as a result of the increase in equity share of the client.

Table 6 presents the calculations:

**Table 6: Musharaka Mutanaqisa**

Payment Number	PMT Amount (1)	Client's share (Principle) (2)	Lender's share (Interest) (3)	Client Equity (4)	Client Equity % (5)	Lender's Equity (6)	Lender Equity % (7)
1	\$ 1147.00	\$347.00	\$800.00	\$30,347.00	20.23%	\$119,653.00	79.77%
2	1147.00	349.31	797.69	30,696.31	20.46	119,303.69	79.54
24	1147.00	404.30	742.70	38,998.82	26.00	111,001.18	74.00
120	1147.00	765.11	381.89	93,482.27	62.32	56,517.73	37.68
179	1147.00	1,132.35	14.65	148,935.36	99.29	1,064.64	0.71
180	1147.00	1,064.64	7.10	150,000.00	100.00	0	0
<b>Total</b>	<b>\$206,460.00</b>	<b>\$120,000.00</b>	<b>\$86,460.00</b>	<b>\$150,000.00</b>	<b>100%</b>	<b>\$0</b>	<b>0%</b>

(1) Monthly installments computed \$120,000 over 30 years at around 7%

- (2) Principle amount of the loan being amortized
- (3) Interest (Rate of Return) paid by Client to Lender. In month 1, it is computed as Fair Rental Value \* (1- % of down payment made by Client). In subsequent months, the following formula is applied:  
(Fair Rental Value \* % of Lender's Equity <sub>(n-1)</sub> in Column (7)).
- (4) In month one, it represents the down payment made by the client (\$30,000) + the principle paid (column (2)). This is being added up in subsequent months.
- (5) Client Equity<sub>n</sub> Column (4)/Total Purchase Price (\$150,000)
- (6) In month one, it represents the contribution made by the lender (\$120,000) - the principle paid (column (2)). This is being diminished in subsequent months.
- (7) Lender Equity<sub>n</sub> Column (6)/Total Purchase Price (\$150,000)

## **Risk Management**

The interest rate risk (rate of return risk) is relatively less than other instruments, as the rent payment can be set according to the market rent values and can be changed over time. The credit risk is high since the ownership is shared between the lender and the client.

### **2.3 Issues for Consideration**

#### **2.3.1 Title Transfer Issues**

According to contracts concluded in the referenced Islamic instruments, property title is transferred to the lender and then to the client, pending on the tenure of the contract.

#### **2.3.2 Default Risk**

Two Islamic schools are implemented in the area of default risk. The first school states that there should be no penalty or fines if clients default, and they are very strict with this concept. The other school states that when a client defaults he is charged a fine for the period in which he defaults, and others study clients on a case-by-case basis to determine the reasons for default. If the reasons are not satisfactory, they oblige the client to pay a fine for charity. Such a fine is not a profit but is paid directly to the charity.

Of course, this has a great impact on credit risk and, in the case of Murabaha, if the client does not pay a fine (according to the first school), then the credit risk is high; however, in the case of the client paying a fine which is accepted by the second school, then the credit risk is much lower than the first.

It is to be noted in this context that the Islamic state is to pay the debts of a category of people called *al Gharemeen* (those who cannot pay their debts for satisfactory reasons). The Mortgage Finance Law applied this rule in creating and regulating the Guarantee and Subsidy Fund for promoting and insuring mortgage finance. The Fund pays, maximum, three months installments in each 5 years for the client (investor) who defaults.

#### **2.3.3 Prepayment Risk**

As a practice conducted in the Islamic Financial Institutions, prepayment risk is dealt with when the client decides to pay off the loan before its duration is over. Some lenders do not deduct any amounts/percentages as prepayment fees, and the client has to pay

the remaining amount of the loan agreed upon. However, other lenders deduct an amount in the form of a grant/prize given to the client.

#### **2.4 Recommendations**

The tripartite contract is an Islamic contract and can be used by Islamic Banks. The mortgage finance market requires a tripartite contract which in fact is an overlapping of two contracts with two parties, and one party common in both contracts (namely the lender).

In the Islamic mortgage instruments mentioned in this paper, if the property is not registered, the seller has a continued relationship with the client because the ownership of the property will be transferred at the end of the loan from the seller to the client. The lender is only holding a full representation power of attorney from the seller to be able to complete the registration process for the client or for the lender, if the client defaults. Since ownership is not completely settled until it is registered, the tripartite relationship in the Islamic mortgage instruments (seller, lender, and client) is continued until payment and registration are both completed. It is also cost effective not to register the property in the name of the lender and then register it again in the name of the client. Islamic banks keep housing finance files with the preliminary selling contracts and the full power of attorney active until full payment. They only start the registration procedures and keep renewing the application, without having to finalize registration until full payment.

From that perspective, the three Islamic mortgage instruments (Murabaha, Ijara Wa Iqtina, Musharaka Mutanaqisa) included in this study can be introduced to the housing finance sector.

In fact, because these three instruments are widely used in global markets and the demand for Islamic mortgage is increasing, it is expected that there will be great appetite for these products in the Egyptian market.

**Table 7: Islamic Mortgage Instruments Comparison Table**

*\*Compared to conventional fixed rate mortgage*

<b>Instrument</b>	<b>Description</b>	<b>Affordability*</b>	<b>Risk Management*</b>
<b>Murabaha</b>	Instrument based on the principle of buying and selling goods at cost plus a declared mark-up profit.	Same as fixed rate conventional mortgage finance.	The interest rate risk (rate of return risk) is the same since the bank bears all the risk of changes in the market. The credit risk is relatively high since clients may delay the payment without the bank charging extra fines or payments. However, some banks charge the clients a fine for delaying payments, and in this case, the credit risk is relatively lower.
<b>Ijara wa Iqtina</b>	This is the Islamic form of lease-to-own transaction.	Same as fixed rate conventional mortgage finance.	Since the rent is fixed for many years, the institution bears the interest rate risk (rate of return risk). The credit risk is relatively less than other instruments since the institution retains title to the unit until the lease terms are met, thus avoiding reliance on foreclosure laws, but leaving reliance on eviction laws in case of default.
<b>Musharaka Mutanaqisa</b>	The unit is co-owned by both the financier and the client, pro-rata to their respective debt and equity contribution. The financier then leases its co-shared part to the client, who accordingly pays the financier its share of the would-be market rent plus gradually buys out its share.	Modest increase in affordability since changes in the market rents are carried by the client.	The interest rate risk (rate of return risk) is relatively less than other instruments since the rent payment can be set according to the market rents and change over time accordingly i.e. the risk is shifted to the client. The credit risk is also relatively lower since the ownership of the unit is shared between the institution and the client.

Islamic financial institutions face higher liquidity risk than the conventional banks given their limited opportunities to access external funds to meet their obligations. The financial institution is constrained by illiquid assets to meet its liabilities and financial obligations. Unlike conventional banks, Islamic banks do not have access to borrow or raise funds at reasonable cost, when needed, due to the limited availability of Shariah – compatible money market and inter-bank market and the shallow secondary markets.

## **Annex 1 - AMIs for High Inflation Environments<sup>5</sup>**

The “Standard” mortgage instrument used by many lenders for home purchase is the fully amortizing constant payment mortgage. The loan uses a repayment pattern of constant, regular payments calculated from the original loan amount at a fixed rate of interest for a given term. This structure allows the original loan amount to be completely repaid at the end of the term, with the lender having rate of interest on the outstanding loan balance throughout the loan term.

Experience in inflationary economies has highlighted the problems this standard instrument can cause for both borrowers and lenders. With high inflation, lenders are forced to charge a high nominal interest rate on a loan in order to maintain a positive real rate of return on their investment. This high rate leads to high initial payments under a fixed-rate, fixed-term loan. However, as time passes, the real value of the loan payment (constant in nominal terms) is eroded by the continuing inflation. This decline in the real value of the payment over the term of the loan is known as the “tilt” problem: the real repayment of the loan is “tilted” toward the early part of the loan term.

This tilting of the repayments has a modest positive effect for the lender (in that he receives higher real repayments in the early years of the loan term). The effects of the tilt on the borrower are much more substantial. The higher nominal interest rate required to overcome the expected impact of inflation raises the payment; this higher payment must be met out of the borrower’s current income. Over time, of course, as nominal household income rises with inflation, the required payment becomes more and more easily affordable. However, the high real value of the initial payment implies that households will have a harder time qualifying to borrow, given that the tilt effect increases as inflation increases, it is clear that higher levels of inflation make it increasingly difficult for households to borrow for home purchase.

A series of alternative mortgage instruments have been developed to address the tilt problem. They have in common deferring some of the payments due in the early years of the mortgage contract to later years when the borrower can better afford to make larger nominal payments. A significant impact on banks making such loan is that the loans experience negative amortization for some years before the loan principal is paid off in sufficiently larger amounts for the loan balance to decline in nominal terms.

### **The Dual Index Mortgage**

The dual index mortgage (DIM) attempts to overcome the tilt problem in a way that distributes risk reasonably between both the lender and the borrower. Under the DIM, the loan’s repayments and the outstanding balances are related to appropriate indexes to address the key concerns of each party. Payments are indexed to some measure of workers or households in order to maintain the affordability of the loan to the household. The nominal loan balance is indexed to a measure of inflation or cost of funds in order to protect the real value of the lender’s asset.

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<sup>5</sup> From R. Struyk, *Homeownership and Housing Finance Policy in the Former Soviet Bloc: Costly Populism*. Washington, DC: Urban Institute Press, 2000.

In circumstances where real wages are falling, households would not be required to make the full payment of principal and interest due; the unpaid portion is capitalized into the outstanding balance. Note that repayments are indexed to a general wage series, not the wages of the individual borrower, so credit risk is reduced, not eliminated.

Since the real rate of repayments can vary, the loan term must also be variable to accommodate shortfalls in real repayments when real wages are falling and accelerated real repayments when real wages are rising. Thus, a key question in designing the DIM is establishing the initial loan maturity schedule so that sufficient maturity extension can be accommodated to deal with possible shortfalls in real repayments. For example, the mortgage could be structured so that in the absence of any real wage changes the loan would fully amortize in 12 years, but the contracted term of the mortgage could allow for an additional five years to cover any losses stemming from shortfalls in real repayments.

If the index for adjusting the loan balance is well-chosen to move with the bank's cost of funds, the bank can largely insulate itself from interest rate risk under the DIM.

### **The Deferred Payment or Dual Rate Mortgage**

The deferred payment mortgage (DPM), also called the dual rate mortgage, offers an alternative to the DIM that places more of the adjustment burden on the borrower. But when used it has permitted a lower initial rate in computing monthly repayments and thereby has increased the size of the loan for which the borrower can qualify.

The DPM uses two interest rates. The payment interest is used to compute the current payment due from the borrower. The contract interest rate is the rate charged on the loan and is used to compute the full payment due each month. Each month four actions occur: the bank computes the payment due using the contract interest rate; the borrower makes a payment based on the payment interest rate; the bank adds the difference between the two payments to the loan principal; the bank reduces the amortization period by one month. By reducing the amortization period each month the bank forces the loan to be paid off on the term stated in the mortgage contract.

In a typical case, the payment interest rate could be 10 percent and the contract rate 25 percent. Under such parameters, negative amortization is substantial in the early years of the mortgage contract but falls sharply at something over half of the stated loan maturity.

If the contract interest rate is variable, then changes in the interest rate are reflected in the borrower's payment through their impact on the size of the loan principle. So, the bank shifts interest rate risk to the borrower. As a consequence, the bank will usually use a comparatively low maximum ratio of mortgage payment to income, perhaps 20 percent, to provide a cushion for the borrower's ability to pay in case of interest rate increase (the payment rate is fixed). Simulations indicate that large interest rate increases lasting for two or three years do not result in correspondingly large percentage increases in loan repayments because of the muting effect of adjusting the loan balance rather than payments directly.

## **Dollar-Denominated Loans**

In some countries banks have used loans whose mortgage principle and payments are denominated in U.S. dollars to address the tilt problem. That is, to increase the size of the loan the borrower can take with a given initial monthly payment, and to protect the bank against interest risk. The monthly repayment is computed in dollars, using the applicable interest rate and loan term, and then converted to local currency, using the exchange rate on the day on which the payment is made.

If the exchange rate moves with the inflation rate, then the dollar interest rate is effectively being set at the real interest rate plus premiums for several types of risk, for example, credit risk or liquidity risk. Because these risk premiums are charged regardless of whether the loan is dollar-denominated or local currency denominated, the difference between the dollar rate and the local currency rate will be close to the rate of inflation, possibly a very large figure. In this loan type, like the DPM, interest rate risk (approximately by exchange rate risk) is borne largely by the borrower. A sudden devaluation, where payments increase much faster than incomes, can produce “payment shock” that dramatically raises the credit risks to the bank. So, the bank pays some price in greater credit risk for shifting the interest rate risk to the borrower.

In fact, in countries of the former Soviet Union in particular, exchange rates and interest rates have not moved closely together. For this reason, some banks have extended dollar-denominated, variable interest rate loans to protect interest rate risk.

## **Annex 2 - Other Forms of Islamic Instruments**

### **Buy-to-Let Investment Instrument**

This instrument is applied by the Ahli United Bank's Manzil home purchases plan as a request from clients to have an instrument purely purchased as an investment. Simply, this instrument is applied when the client's actual or forecasted net rental can sufficiently cover the monthly payments required by the bank.

In the Egyptian local market, this instrument would have an impact if implemented because there is a social need for it. Basically, the social need is that families tend to buy properties for their children prior to their occupation.

The mechanism of this instrument can be based on any of the three instruments introduced in this paper with the difference that the payments would be made out of either the fair rental value or the actual rental value being conducted; in other words, the client is not assessed on his income, but rather on the rent paid or valued for the property.

However, this instrument is more of a risk to the bank than purchasing a property to occupy it. This is because the main flow of payments comes from rental payments paid to the owner, and thus, if these payments are stopped for one reason or another then default risk arises and payment delays are extended without extra charges. On the other hand, this instrument can stipulate the size of loan portfolios offered by lenders and also would make mortgages more attractive for savers than other saving schemes.

### **Istisna**

"The contract of Istisna is suitable to facilitate the manufacturing or the construction of an asset at the request of the buyer."

According to Dubai Islamic Bank, Istisna is implemented to finance properties, buildings, and villas. The lender has it constructed by someone else to deliver it to the client on the date described in the sale contract. The client can pay the sale price in a lump sum at the time of signing the contract or later, in different stages, as the construction process proceeds. This instrument can assist developers greatly in their construction process since the lender can finance the construction process and help the developer to deliver the product to the client under the specifications of the client.