

Currency Reform in Turkey and Lessons from Re-Denomination and Euro Changeover

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Abstract

Re-denomination was not only a zero dropping and new coin minting operation but also a significant milestone in Turkey. Before the currency reform, multiple zeros had posed several difficulties in expressing monetary values, transactions, bookkeeping and statistical records, data processing software, payment systems, price labels etc. So, removing six zeros from national currency became a technical and psychological need in Turkey.

In the first phase of the currency reform, six zeroes were removed from the national currency and the prefix “New” was added to the currency’s name as of January 1, 2005. At the beginning of the reform, it was also decided that in the second phase, the prefix “New” used during transition period would be removed and traditional currency name, “Turkish Lira” would be reverted back. For that stage of the reform, the Council of Ministers took the decision and the operation started on January 1, 2009.

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This paper focuses on the currency reform in Turkey and lessons from re-denomination and Euro changeover in different perspectives. The first section of the paper deals with two stages of the currency reform; the background, other countries' experiences, legal, financial and technical aspects of the operation and the tasks of different institutions namely the Central Bank, Minister of Finance, Ministry of Industry and Trade, Under secretariat of Treasury, Banks and Credit Institutions, Capital Market Board, Turkish Statistical Institute, Banking Supervision and Regulation Agency.

The second part discusses organizational and communicational aspects, the physical changeover and its effect on banking and retail sector, the withdrawal of legacy notes and coins and lastly the impact of the operation on prices.

The benefits of the operation and the general evaluation of the reform are summarized in conclusion.

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1. Introduction

The national economies might function with prices expressed in millions, but the escalating inflation generates a higher operational risk and continuous need for larger banknotes. Multiple zeros pose several difficulties in expressing monetary values, transactions, bookkeeping and statistical records, data processing software, payment systems, price labels etc.

In Turkey, the inflationary process, gaining strength in 1970s forced public to learn digits usually seen in astrophysics. Economic values were expressed in terms of billions, trillions and even quadrillions. The cash demand in the economy was met by new banknotes in larger denominations, which were put to circulation almost every other year since 1981. The enormous figures with all the zeros led to a variety of problems. Due to its record-high denominations in the world, Turkish Lira lost prestige in the eyes of the public.

Through strict fiscal policy, as a result of the significant decline in inflation from chronically high levels, and the steadily rising confidence in Lira, the decision to re-denominate the currency was presented as part of a tight economic program. In the light of the above-mentioned factors, removing six zeros from the national currency became a technical necessity. This move would not only ease dealing with and interpreting unusually high numbers, but would also restore the credibility of the national currency.

The first Draft Bill that aimed at removing five zeros from Turkish Lira was presented to the Prime Ministry on December 25, 1998. However, zero-dropping operation could not be performed until 2005, due to the facts that: the programs that were put into practice with the aim of fighting against inflation, could not be implemented, and expected and realized rates of inflation could not be pulled down to reasonable levels.

With inflation and the economy stabilized, restoring credibility in the currency and overcoming the logistical and technical issues of such high denominations were considered critical. In 2004, the most challenging task of the Central Bank (CBRT) was to initiate, maintain and coordinate efforts in an objective to carry out the redenomination of the national currency on Jan 1st, 2005; first in country's history.

In the first phase of the currency reform, planned to run in two phases, six zeroes were removed from the currency and the prefix *Yeni* New was added to the currency's name. New Turkish Lira (YTL) banknotes and coins were put into circulation as of January 1, 2005 backed by an extensive campaign to ease the changeover and inform the public and financial system.

For easier recognition of the banknotes and to prevent confusion in transition to YTL, denominations with the same purchasing power were produced in the same colors and designs as those of their predecessors. Same policy of using contrast colors for successive denominations was also applied while size differentiation was partially for 1, 50 and 100 YTL in order to prevent visually impair and to combat counterfeiting. 1 YTL was put into circulation both as a banknote and coin in order to revive coin usage that was forgotten.

At the beginning of the currency reform, it was also decided that in the second phase the prefix *Yeni* New used during transition period would be removed and traditional currency name, *Türk Lirası* Turkish Lira would be reverted back. For that stage of the operation, the Council of Ministers took the decision to remove the prefix *Yeni* New from *Yeni Türk Lirası* New Turkish Lira that took effect on January 1, 2009.

As known, it becomes a must to renew the designs and security features of banknotes in particular periods. Therefore, the second phase of the reform was considered as an opportunity to issue the Turkish Lira banknotes with new designs, sizes and enhanced security features. The prefix *Yeni* New would also drop from coins and new ones would be redesigned.

This paper focuses on the currency reform in Turkey and lessons from currency reform and Euro changeover in different perspectives. The outline is organized as follows. The first section deals with the first and second stages of the currency reform and legal, financial and technical aspects of the operation. The second part discusses the lessons from currency reform and euro changeover. Organizational and communicational aspects, the physical changeover and its effect on banking, retail sector and economy and lastly the withdrawal of legacy notes and coins will be covered.

2. Currency Reform in Turkey

2.1. Background of Currency Reform

Starting from 70 s, multiplying zeros on our banknotes raised some difficulties in expressing monetary values, cash operations, bookkeeping and statistical records, accounting software, settlement systems, price tagging, equipments such as taxi-meters and gas pumps. Moreover, expression of economic figures in terms of quadrillions affected the main functions of TL negatively. In addition, transactions exceeding 99 trillion could not be realized at a time in the Swift system allowing maximum 14 digits.

On the other hand, high and persistent inflation caused higher banknote cycle figures and more elaborate cash operations. These factors affected production, distribution and storage costs adversely and resulted in higher operational risks. In addition to these, CBRT had to introduce higher value denominations frequently to overcome these bottlenecks.

**Table (1) Highest Denominations in Circulation in Turkey
(1981-2001)**

Denomination	Issue Date	Time Span till next denomination issuance	Inflation Rate (CPI) Difference of Consecutive Periods	Value in USD of Newly Issued Denomination*
5.000	02.11.1981			38,7
10.000	25.10.1982	1 year	29,1	55,5
20.000	09.05.1988	5 year 6 months	670,9	15,5
50.000	15.05.1989	1 year	60,2	24,3
100.000	11.11.1991	2 year 6 months	235,9	20,2
250.000	02.10.1992	11 ay	57,3	34,2
500.000	18.03.1993	5 ay	32,9	52,7
1.000.000	16.01.1995	1 year 10 months	251,8	25,0
5.000.000	06.01.1997	2 year	195,6	46,2
10.000.000	05.11.1999	2 year 10 months	416,7	20,6
20.000.000	05.11.2001	2 year	140,4	12,8
Average		2 year	209,1	31,4

Source: CBRT, (*) CBRT foreign exchange selling rate.

Table-1 summarizes how often CBRT had to issue higher denominations and erosion of the value of denominations in terms of USD. Large denominations threatened Turkish Lira s credibility (rental agreements in USD or some shops favoring Euro or USD instead of TRL, savings accounts in USD or etc). As a result, redenomination of Turkish Lira became psychologically and technically inevitable and necessary.

There were 49 countries removing zeros from their currencies before Turkey. Looking at countries that experienced currency reform, we see that removing zeros are usually mentioned along with a stabilization program. On the other hand, implementations of currency reforms were different among countries. For instance, in Brazil, Argentina and Israel, operations were conducted in high inflationary environments. Operations took place after stabilization program resulted with positive outcomes in

countries like Poland, Bolivia and Bulgaria. Country experiences indicate that success of currency reforms depends heavily on achievement of stabilization programs.

Since the successful implementation of the stabilization program after 2001 had produced favorable results, it was deemed appropriate to start the operation in early 2005. Moreover, the beginning of fiscal year was preferred in transition to zero removal operation, in order not to impose burdens on real persons and legal entities liable to keep books and records.

2.2. Currency Reform Phase-1: New Turkish Lira

The Law on Currency Reform (No: 5083) enacted on January 31, 2004 envisaged that the reform would be in 2 phases. At the first phase, six zeros removed from our currency and prefix Yen(New) should be added to our currency name.

Reform of 2005

YTL Bank notes: 1, 5, 10, 20, 50 and 100 New Turkish Lira (YTL)

Coins: 1, 5, 10, 25, 50 New Kurush (YKr) and 1 New Lira

Sub unit of the New Turkish Lira was the New Kurush

1 New Turkish Lira = 100 New Kurush

1.000.000 TL=1 YTL; 10.000 TL=1 YKr

Currency reform brought various benefits to people's daily life. First, by removing zeros, technical and operational difficulties caused by multiple zeros were overcome. This operation brought about a general simplification in expressing monetary values and records. Second, this operation was the indicator of the success in lowering inflation and determination to permanently bringing inflation down to single-digit numbers. Third, public confidence towards national currency was re-established. A single-digit inflation accompanied with zero-dropping operation improved credibility of the currency. Fourth, the operation improved tendency to familiarize with single-digit inflation rates by

reducing resistance in expectations and helped abandon retrospective reference attitudes. Fifth, low inflation figures would avoid the need to alter denomination compositions for a long period. And lastly, issuance of two higher YTL denominations reduced the production cost of banknotes and eased transaction volumes for both commercial banks and the Central Bank.

In conclusion, currency reform was successful overall. The operation was performed by cooperation of all participating institutions and the public. Communication policy was important to create awareness and publicity campaign conducted by a professional Public Relations company resulted in positive outcomes. Also, positive outcomes of the stabilization program contributed a lot to the success of the currency changeover.

2.3. Currency Reform Phase-2: Reverting Back to Turkish Lira

At the beginning of the currency reform, it was also decided that in the second phase the prefix *New* used during transition period would be removed and traditional currency name, *Turkish Lira* would be reverted back. On May 5, 2007, The Council of Ministers decided to remove the temporary prefix *New* and to revert back to *Turkish Lira* (TL), the original and traditional name of the currency as of January 1, 2009.

In the second and final stage of currency reform, Turkish Lira banknotes of E9 emission group, with their renewed designs, modified sizes and advanced security features, were introduced into circulation on January 1, 2009.

Reform of 2009

TL Banknotes: 5, 10, 20, 50, 100 and 200 Turkish Lira (TL)

Coins: 1, 5, 10, 25, 50 Kurush (Kr) and 1 Lira

Since all denominations were issued at the same time, Central Bank had the chance to produce Turkish Lira banknotes with a series design

concept. The Turkish Lira banknotes feature many firsts within. The banknotes increase in size from the lowest to the highest denominations, and the security features, which are common to all, are applied in the same position and in the same manner. There are a number of public features, including an embedded security thread bearing the letters TL and the denomination numeral, a watermark portrait of Atatürk and an electrotype denomination numeral, a see-through feature, latent image and iridescent stripe on the reverse. The banknote paper is tinted with the dominant color for each denomination, and all are printed one-side intaglio, with a series of intaglio-printed dots in the upper left corner to assist the visually impaired.

In addition to these public features, the new banknotes also include mini lettering, micro lettering and UV visible features ° both embedded as fibers and printed - for the benefit of professional cash handlers.

As it was implemented in 2005, one-year dual circulation was stipulated to allow citizens to convert their banknotes and coins into new ones at their convenience throughout 2009. New Turkish Lira banknotes and coins were removed at the end of 2009 and the redemption period for New Turkish Lira banknotes is 10 years while it is 1 year for coins.

2.4. Legal, Financial and Technical Aspects of the Currency Reform

The reform required a comprehensive work in legal, financial and technical fields. Regulations and actions taken by institutions that participated to Steering Committee are analyzed in this section.

Central Bank

Upon publication of the Law on the New Turkish Lira on the Official Gazette on January 31, 2004:

- A press conference was held on February 9, 2004 aiming at informing the public and covering: the legal ground, benefits, timing, milestones, possible economic impacts, legal provisions,

denomination of New Turkish Lira banknotes and coins, various countries' experiences in dropping zeros and the agenda.

- Based on Article 4 of the Law on the New Turkish Lira, reproduction and publication rules for banknote illustrations and images were announced in the Official Gazette on February 24, 2004.
- The text of the Law, the aforementioned press conference presentation, rules relating to reproduction and publication of banknote illustrations and images, the format of the list of indicative exchange rates to be announced after the introduction of the New Turkish Lira and frequently asked questions/answers on the new currency were published on the CBRT's website. An e-mail address (yenilira@tcmb.gov.tr) was assigned to collect questions regarding the new currency, and issues addressed by the public were answered online.
- Meetings were held with European Central Bank in February 2004 and information on experiences during Euro transition was obtained.
- To ensure timely accomplishment of preparatory works and coordination, a Steering Committee was established by the CBRT, including representatives of the Ministry of Finance, the Ministry of Industry and Trade, the Under secretariat of Treasury, the Prime Ministry's State Institute of Statistics, the Banking Regulation and Supervision Agency and the Capital Markets Board. The Steering Committee was chaired by the Vice Governor of the CBRT which was responsible for the currency reform operation.
- Action plans were prepared by each participating institution under the guidance of the Steering Committee.
- The Steering Committee decided to set up 3 sub-committees: on Data Processing (IT Management), on Accounting, on the implications for Companies.

- The Companies Sub-Committee, which was chaired by the Ministry of Industry and Trade, conducted studies for drafting a bill, which was necessary for increasing the minimum nominal value stocks from 500 TRL (=0.05 New Kuruş) to 10.000 TRL (=1 New Kuruş) to be incorporated into the Turkish Trade Law.
- The comments of the Central Bank relating to the draft bill were conveyed to the Ministry of Industry and Commerce on June 11, 2004.
- The Accounting Sub-Committee, chaired by the Ministry of Finance, helped to prepare a list of issues that the MoF would address, and this list was made public.
- In order to support the studies conducted by the Data Processing Sub-Committee, which was chaired by the CBRT, special study groups were established with the participation of representatives of the Turkish Banks Association, banks and private financial institutions. Meetings with software companies dealing with accounting were also held.
- Adaptation of payment and securities settlement systems (TIC-RTGS and TIC-ESTS) to YTL completed.
- An ISO code for YTL was assigned (TRY 949-2)
- The General Directorate of Banking and Financial Institutions Circulars on Credit Limit and Risk Notification and Protested Bills were announced on July 21, 2004.
- The General Directorate of Banking and Financial Institutions announced adjustments for YTL in its circulars in August 2004.
- CBRT issued an instruction regarding the check notices and exchange operations after January 1, 2005.

Ministry of Finance

- Chaired Accounting Sub-Committee.
- Issued a notice regarding changes in payment recording systems.

- Enabled taxpayers to fully deduct the recording devices as expenses, according to the Article 13 of Law no. 5228, which was published in the Official Journal dated July 31, 2004.
- Published a notice about the basis for the use of the YTL in private sector accounting.

Ministry of Industry and Trade

- Changed the Turkish Trade Law to accommodate the conversion of the (minimum) nominal value of shares to YTL.
- Announced the requirement that between January 1, 2005 and December 31, 2005, all prices of goods and services would be displayed in both currencies. This would apply to all retailers and sellers of goods and services through the markets.
- Sent information to the Turkish Confederation of Craftsmen and Artisans; the Turkey Commerce, Industry, Maritime Trade Chambers and Commodity Exchange Unions; the Ministry of Internal Affairs, General Directorate of Local Authorities; and the Governorships that:
 - Allowed the display of double price labels and schedules in 2004.
 - Allowed the display of only YTL figures on the taximeters of commercial taxis.

Under secretariat of Treasury

- Coordinated YTL preparations of the Public Economic Enterprises (KIT).
- Issued a circular regarding the TRL 50.000 and 250.000 coins to be taken out of circulation as of December 31, 2005 (Law 5083/Article 1, Law 1264/Article 5; September 24).

Banks and Credit Institutions

- Adjusted their systems to changes in TIC-RTGS and TIC-ESTS systems and in Internet Banking Software.

Capital Markets Board

- Announced that on the stock market, the market price declared for the stock of nominal value of 1.000 TL in the existing system, would be declared for the stock of nominal value of 1 YTL in the new system.
- Changed the systems from 1.000.000TL (nominal) = 1.000 pieces = 1 lot to 1 YTL (nominal) = 1 unit = 1 lot .
- Decided not to conduct operations in the IMKB Stock Markets in order to avoid any possible complication, the exchange process while enabling the members to conduct their year-end operations on December 31st.
- Applied the required modifications in the calculation of the IMKB, while maintaining the existing digit numbers to provide continuity.
- Decided to enable price and quotation entries as three decimal digits for forward exchange operations, with the new price step to be 0,001 YTL and the profits/losses due to updating collateral prices to accounts as two decimal digits.
- Decided the unit prices for investment bonds to be displayed as six digits in YTL.

Turkish Statistical Institute

- Studied standards for using either point or comma as decimal separator for displaying Kuru and for storing past data.

Banking Supervision and Regulation Agency

- Announced that there was no need for changing the Notification regarding the Uniform Chart of Account for monitoring TL and YTL amounts.
- Announced to monitor the YTL banknotes that were put in circulation on January 1, 2005 on the Cash account and to monitor the TL banknotes that remained in circulation for 2005 on a secondary account that opened under Cash or under Foreign

Currency Depot according to 1 YTL = 1.000.000 TL, with regard to the latter under the condition that it was not regarded as foreign exchange in preparation of any report and financial statement related to Banks Law No. 4389 Article 13.

All Parties

- Conversion and adaptation of accounting systems, other computer programs, bank accounts, bank clearing operations completed timely.
- All legal and financial instruments prepared in terms of New Turkish Lira before January 1, 2009, were valid and deemed at the same value, equivalent to the Turkish Lira (parity: 1-to-1)
- Agreements prepared in New Turkish Lira continued at an equivalent value in Turkish Lira.
- Current agreements remained in force. No alterations obligatory.
- As of January 1, 2009, all bank accounts in New Turkish Lira were directly converted into Turkish Lira accounts with no difference in value.
- Bank deposit books and account numbers remained the same.
- All new transactions had to be recorded in Turkish Lira as of January 1, 2009.
- Conversion to Turkish Lira did not affect nominal values of stocks and bonds.
- Checks with issue dates before or after January 1, 2009 and in the same value in New Turkish Lira or Turkish Lira presented for cashing before January 1, 2009 were paid in New Turkish Lira since Turkish Lira was not in circulation.
- The issuer could use checkbooks published in New Turkish Lira by canceling the prefix "New" from the New Turkish Lira with an initial.

- As of January 1, 2009, prices in various documents (invoice, bill of expenses, payroll, etc.) were shown only in Turkish Lira (TRL) or Kuru ₺.
- All declarations (VAT, withholding tax, provisional tax, income and corporate taxes) were prepared in Turkish Lira and Kuru even if they were due in 2008 taxation period.
- Taxpayers had to prepare their accounting records in Turkish Lira and Kuru .
- As of January 1, 2009, prices were displayed in Turkish Lira on labels, tariffs and price lists for goods and services. However, labels, tariffs and price lists with ₺ or ₺K were used throughout 2009.
- No changes imposed on the announcement or value of exchange and F/X rates. Only the name of the currency was changed.
- The former international currency code, TRY 949-2 kept unchanged (assigned in 2004 to denote the zero-less currency).

3. Lessons Form Re-Denomination and Euro Changeover

One of the latest examples for currency reform was the Euro Changeover in 2005. Even though euro changeover was a more comprehensive operation and different from our experience in different perspectives such as different exchange rates, different redemption periods and various approaches to organization, it is beneficial to analyze both operations. Therefore, topics like organizational and communicational aspects of both operations, the physical changeover and its effect on banking, retail sector and economy and lastly the withdrawal of legacy notes and coins are covered in this section.

3.1. Organization

Currency Reform in Turkey

The Steering Committee established a well-defined organizational structure that enabled all the necessary preparatory work of

governmental institutions, monetary and capital market institutions, banks, companies etc. to be done in a coordinated and integrated order. This was of great importance, since modern economies are deeply integrated, especially in the financial sphere, therefore the introduction of a new currency required a close cooperation of all the key parties involved.

The Steering Committee was established with the participation of high-ranking Governmental Representatives as well as the Banking Regulation and Supervision Agency and the Capital Markets Board under the chairmanship of the CBRT.

The Steering Committee set up three Sub-Committees for IT Management, Accounting and Companies and the sub-committees established other working groups each to deal with special issues.

The participating institutions prepared action plans and agreed on timetables under the directive of the Steering Committee. The exchange of information between these committees and working-groups worked well. The outcome was made available to the public on dedicated website that also provided FAQ (Frequently Asked Questions) lists with the respective answers.

A website was available to provide information regarding preparations and collecting questions/comments. Information was spread immediately to all parties involved (the site contained all regulations, campaign materials, etc.). Anyone visiting the website was able to find answers to likely questions. All presentations and declarations given by CBRT authorities on various occasions were available for public viewing on the Bank's web site (exchange rates, examples for rounding, rules relating to reproduction and publication of banknote illustrations and images, FAQ etc.). In addition, yenilira@tcmb.gov.tr email address was assigned to collect questions and answers posted on-line. New entries were added into FAQ sites frequently. In addition, meetings held with Agricultural Bank and PTT for logistic support.

The Banks Association also established a variety of working-groups dealing with changeover issues. In order to define proper action plans, a questionnaire was sent out to all individual banks to identify problems. The Banks Association also established a special website where all papers and notes produced by the working groups as well as all other information related to the introduction of the YTL were made available. The Banks Association also has a FAQ list on its web site that proved to be very helpful.

All the main parties involved in the exercise established internal working-groups, that identified to-do-lists, developed action plans.

A close cooperation took place among the IT-departments of the Central Bank, Banks Association as well as the IT-departments of the large banks and software houses; especially those that dealt with accounting. The action plans in this highly sensitive area were well integrated.

The Banking Supervision and Regulation Agency introduced special reporting schedules that banks had to report on the status of their preparatory work. Banks planned to complete most of their action plans by the end of October 2004.

The rules of the game were known well in advance. For the timely adaptation of the IT systems it was of critical importance that all necessary regulations on accounting-systems, payment-recording, tax-declarations, monetary and capital market procedures, non-cash-payment procedures and forms as well as the physical aspects of the new banknotes and coins and their respective security items were announced in time.

To sum up, it can be said that organization of the currency reform was centralized in Turkey. There was a Steering Committee chaired by CBRT and it was formed to fulfill all arrangements. Allocation of duties and responsibilities of the committees and participating institutions were clearly defined.

Euro Changeover

The euro changeover was organized in detail and implemented at national level. It was overseen at European level by ECB. The Governing Council of the ECB played a major role in organizing the cash changeover, and set up a Euro system committee at working level (Cash Co) to plan, execute and monitor it.

In some countries (Belgium, France, Italy, Portugal and Spain), the authorities played a role in coordinating early conversion, in agreement with the banks. In the others (Austria, Finland, Germany, Greece, Ireland, Luxembourg and the Netherlands), there was a fully decentralized approach, in which the timing of the changeover was left entirely to individual banks (and their associations).

In all countries, the central banks played a major role in organizing the cash changeover and in monitoring or assisting preparations for completing the non-cash changeover.

In some European countries, there were problems some due to disorganization in responsibilities. For example, responsibilities of the Treasury, the Mint and the Banque de France were not sufficiently clear; and the emergence of problems in coin distribution required a clarification of these roles. Also in Spain, coins could not be delivered to banks as quickly as planned, and banks advised to customers that they would use the whole January and February to exchange cash, conflicting with the Government's message encouraging people to make the change as quickly as possible.

3.2. Information Campaign

Currency Reform in Turkey

It was essential that there would be a clear and comprehensive information campaign about the changeover, not only for the benefit of the public, so as to minimize the risk of public confusion, but also to inform staff in banks and businesses about the operation and to encourage all sectors of the economy to be ready in time.

Therefore, a public relations company was granted the tender for publicity campaign. The information campaign aimed at informing the public, gaining support of the society for this implementation and motivate for the transition process.

In the planning stage of the campaign, the primary target group was citizens with relatively unreceptive behavior to communication, unable to take advantage of the opportunities of technology, who were at or above the age of 60 and illiterate and lived in rural areas. The main targets of the campaign were:

- To create awareness regarding double-price labeling obligation and raise consciousness on this matter,
- To introduce the physical images and security features of New Turkish Lira banknotes and coins and thus reduce likely concerns,
- To inform the public about the problems that the transition to New Turkish Lira might bring about in the implementation stage and to cognitively and psychologically prepare the public for the operation

Also, CBRT representatives conducted a series of talks with the representatives of various institutions.

- TV& Radio programs and conferences were arranged in various cities. Meetings were held with Turkish Radio and Television (TRT) for cooperation/assistance during the campaign. A wide range of other steps was taken at national level to inform public about currency reform.
- Over 100 interviews/informative talks given by CBRT authorities. CBRT immediately responded to information requests and out-of-focus or deceptive-to-be media news.
- Prepared educational material for kids/students. In order to reach wide range of professional business and retail sector CBRT organized trained programs for trainers.

- Representatives of different sectors were informed about currency reform and they were trained on security features of new banknotes and coins.

Overall, the information campaign was organized well. The financial sector involved in this also, but their communications were towards their clients (commercial sector and private account holders) rather than towards the general public.

The campaign is organized in 2 stages starting from August. In October the second stage started with unveiling the visual features of new banknotes and coins. This schedule allocated time for frontloading, training programs and adaptations of equipments.

Thanks to great support of other public and private entities that the overall budget for the campaign was not more than \$ 1 million in each stage.

Euro Changeover

In the scope of the information campaign of euro, we see alongside the information campaign organized by national governments, the ECB and NCBs in the Euro system. They established partnership programs with private sector.

The goal of the campaign was to familiarize the public in the euro area with euro notes and coins prior to their introduction. It was extremely important to gain public confidence.

The campaign launched in August reached a peak in the launch of euro notes and coins, and continued during the cash exchange period. A wide range of media (including TV, radio, press, billboards, videos, information leaflets, dedicated website) was used to convey messages to the public, retailers and small businesses, and also to a limited extent to countries outside the euro area. Public awareness of the changeover increased sharply as a result. Special attention was given to vulnerable groups especially blind and elders.

A wide range of other steps were taken at national level to familiarize the public with the euro: help lines; Q&As; practical

examples; euro road shows by bus, truck and train; training for cash handlers; using schools and colleges as a transmission channel; translation of leaflets into foreign languages for tourists and foreign workers.

In general, the public in the euro area accepted readily the completion of the changeover. It can be concluded that the objectives of the communications program were met.

The overall budget for the Euro-system campaign was around 400 million, including 80 million for the campaign organized by the ECB.

3.3. Frontloading Banknotes and Coins

Currency Reform in Turkey

Before January 1, 2005; approx. 800 tons, YTL 16 billion in value and 600 million in pieces were produced. 3/4 of these banknotes were distributed to our branches by highways and airways by making 344 transfers in total.

Regarding coins; 6.356 tons, approx. YTL 425 million in value and 1,2 billion coins were produced; 3.451 tons of these were distributed through highways and railways by the end of the year by making 150 transfers in total. 2/3 of coins were distributed by CBRT and Agricultural Bank (TCZB), 1/3 of them by State Mint.

PTT provided logistics support for coin shipment directly from the Mint to CBRT and agricultural Bank (TCZB) branches. YTL shipment was completed in eastern branches by end-October 2004.

Security of shipment is provided by Security General Directorate, police escort and Bank's security officers. Transferring processes realized seamlessly. After evaluating cash balances by the end of the year, demands for frontloading were collected. Almost all banks demanded more than their cash balances. 29 banks and financial institutions were frontloaded. As percentage of 2004 year-end circulation value; 10.1 % of the banknotes (approx. 1,36 Billion YTL), and 44.5 % of the coins (approx. 58,5 million YTL) were frontloaded.

Since dual circulation period was only 2 months, frontloading was a very critical operation to quicken the cash changeover. It was important for giving chance of sub-frontloading, allocating time for training and adaptation, for setting more trucks free in January, filling ATMs on time, for using capacity of storage efficiently. Since ATMs were not usually filled with low denominations, frontloading gave the chance of using them at over the counters from the beginning of the year.

Therefore, early distribution of euro notes and coins required effective project management by NCBs, with clear responsibilities allocated among the central bank, mint, commercial banks and CIT companies for the detailed logistics of each stage in the distribution process. In general, this exercise was completed successfully, in sufficient volumes (40 % of the notes, 2/3 of the coins), safely and in an orderly way. Some of problems encountered may be listed as:

- Delays in distribution of starter kits due to shortage in some coins, slow progress in sub-frontloading of notes to small shopkeepers due to security and insurance cost, surplus of sub-frontloading in some larger retailers, excess demand for coins due to poor projections and insufficient communication (France).
- Insufficient sub-frontloading of euro cash or excess frontloading of some denominations (5 Euro notes in Germany).
- Small amount of sub-frontloading of euro notes and coins (Italy, Spain) due to security, high CIT fees and penalty regime introduced by the Central Bank of Italy.
- Some logistical problems due to concentration of sub-frontloading in late December (Portugal).

3.4. Payment in Banking Sector

Currency Reform in Turkey

For a successful changeover, technical adaptation of banking infrastructure and compatibility of its systems and software were crucial. In this context Electronic fund Transfer (EFT) and electronic Security Transfer (EST) systems had to be compatible with new currency. All the accounts were converted into new currency at the beginning of the year.

- In the first couple of days, there had been queues in front of the ATMs out of curiosity for new banknotes.
- Banks didn't prefer loading new high denominations (TRY 50 and TRY 100) to their ATMs since their processing machines were not compatible with these denominations yet. This led to slowing down of introduction of these notes.
- Within the first hour; almost all IT was up and converted throughout the country (~ 875.000 POS, 14.000 ATMs, 26 mio credit cards, 43 mio bank cards). Within the first 12 hours; close to 100.000 e-banking and 203.000 card operations were done. First 24 hours; Over 1 Mio transactions were realized. First 48 hours; only 3 % decrease in card operations as compared to 2004's first 48 h; but total value expanded by 15 %.

Euro Changeover

The early adaptation of all 200.000 ATMs in the euro area, to dispense Euro instead of legacy banknotes, was an essential condition for a quick cash changeover, as ATMs represent the route by which up to 70% of the volume of banknotes normally reach the public in the euro area.

The number and value of withdrawals from ATMs in the first few days were higher than for a normal January. But, the proportion of banknotes reaching the public through ATMs early in January was lower than normal, because most people exchanged legacy cash over the counter at bank branches and post offices.

The amount of euro disbursed over the counters exceeded that of ATM withdrawals during the first week of January. There were many attempts to reduce the workload on the banks. Public was encouraged to spend legacy notes through shops and electronic payments. But, unexpectedly large number of people visiting bank branches led to abnormally long queues in many banks for the first few days of January. The limits at banks may have encouraged more people to queue to exchange cash at counters. On the other hand, by the end of the first two weeks, queues were generally back to normal.

Many banks extended their opening hours in early January to cope with the extra workload. Some imposed limits on the amount of legacy cash they would exchange for euro cash for non-customers.

A number of older machines did not initially work. This was partly because the volume of withdrawals in the early part of the new year was four times higher than normal; and partly because some euro notes either stuck together in the machines or were put into ATMs the wrong way round. More ATMs were initially out of order than the normal (3-5%), but only for the first few days. In some countries demand for high denominations was high. For example, high levels of cash usage and hoarding in Spain meant that amounts changed over bank counters were often large, with the average transaction being € 400 and some people exchanging amounts up to the money laundering ceiling. This meant demand was particularly high for € 200 and € 500 notes, denominations which the Central Bank of Spain had not itself produced.

In Belgium, the Commission for the Euro had encouraged the use of payment cards (debit, credit and Proton e-money cards) where possible; but in December and the first days of January card usage fell, as consumers used up Belgian francs, and tried out the new currency.

Authorities had to decide when the accounts will be converted and how. Is it going to be a bang not to confuse the public or a gradual approach starting from even September to spread out the work? Projects style, the scale, types of consumers, internal systems,

availability of expertise, permission of customers for conversion, etc. affect these policies.

Bank accounts and contracts were converted in a big bang approach at end December in some of the countries like Ireland and Austria. In Ireland, data pollution (arising, for example, from customers writing euro amounts on Irish pound cheques or vice versa) had been a major concern, partly because of the high usage of cheques, and partly because the conversion rate was closer to unity than in any other country.

In Italy and Spain, the need to use a decimal point in POS transactions led initially to a few errors.

3.5. Payment in Retail Sector

Currency Reform in Turkey

Currency reform required effective cautions in retail sector. As well as of Jan 1st, 2005, insurance policies and similar documents could be issued only in YTL and taximeters could display only YTL fares. As YTL took effect, some few incidences happened, such as digit mistakes in decimal fractions at POS machines, change shortages and mistakes in cash register sales slips.

Euro Changeover

Supermarkets and other large retail groups were generally able to provide sufficient euro cash in change from the outset, because they had been sub-frontloaded. But there was a shortage of euro change in many smaller shops in some countries, where they had not arranged adequate sub-frontloading.

There was also excess frontloading of some denominations (5 and 10 euro) in some countries. The Confesercenti (representing many small firms) lobbied banks to open counters specifically to allow small traders quick access to small change.

Use of high denomination legacy notes was increased. Consumers spent their high denomination banknotes in larger stores, necessitating

large amounts of change. In Greece and Ireland, scarcity of 1 and 2 cent coins led some shops to round payments.

3.6. Withdrawal of Legacy Banknotes and Coins

Currency Reform in Turkey

For the 1st phase of the Currency Reform:

- Throughout 2005, old Turkish Lira and New Turkish Lira banknotes and coins were concurrently in circulation for one year.
- As of January 1, 2006, old Turkish Lira banknotes accepted during the 10-year redemption period and coins were accepted during 1-year redemption period by the Central Bank of the Republic of Turkey and T.C. Ziraat Bank branches (where a Central Bank branch is not available).

For the 2nd phase of the Currency Reform:

- New Turkish Lira banknotes were in circulation along with E-9 Emission Group Turkish Lira banknotes in year 2009.
- As of January 1, 2009, New Turkish Lira banknotes are being accepted during the 10-year redemption period and coins were accepted during 1-year redemption period by the Central Bank of the Republic of Turkey and T.C. Ziraat Bank branches (where a Central Bank branch is not available).

Euro Changeover

In euro area, most national authorities attempted to reduce the workload for the NCB, banks, retailers and CIT companies during the cash exchange period by encouraging the public to deposit hoarded legacy coin and high-denomination legacy notes in advance.

In total, 6.7 billion legacy banknotes with a value of 231 billion were returned during the cash exchange period. They represented 86% of the value and 75% of the volume of notes outstanding at the end of 2001. Central banks expected that up to 5% of legacy notes would never be returned. Withdrawal of the bulk of legacy cash took place in a shorter period than the distribution of Euro cash.

There were bottlenecks in withdrawing legacy cash early in the new year, as transport and secure storage capacity were strained for a short period, and CIT companies took time to sort and count legacy cash.

In most countries, the volume of coin returned in January exceeded central banks and CIT companies capacity to sort and count leading to delays of couple weeks before accounts were credited.

In order to reduce the security risk during the period in which legacy banknotes were withdrawn, five countries (Belgium, Luxembourg, France, Spain and Italy) introduced schemes to mark specified denominations of their banknotes from 1 January onwards, so that they would not be used by the public. In Luxemburg, there were some sorting problems about perforation of notes because of acting out of scheme for withdrawing.

3.7. Impact on Prices

Currency Reform in Turkey

Experiences in other countries showed that the public tends to watch very carefully any possible impact of the currency changeover on inflation and on the exchange rate. Even in cases where there is no relation at all, in the eyes of the public any price increases during the transition period can be attributed to the change in currency.

Inflationary pressure fear was extensively expressed in all countries that went through a re-denomination process in the last years. Re-denomination was not expected to have either a positive or a negative impact on exchange rates or the overall level of interest rates, other than having a positive impact on expectations, since the main factors determining exchange rates and overall level of interest rates are the fundamentals of the economy and the economic stabilization program.

The requirement to express prices of all goods and services in terms of both the old currency and the new currency should help to avoid the exploitation of the potential rounding up possibilities.

The recent trends (Table-2 and Table-3) confirmed that the redenomination did not have any significant impact on the CPI increase.

On the other hand, because of the high and persistent inflation and higher denominations, there was always a rounding up issue in Turkey before re-denomination. However, after the currency reform, rounding up effect wasn't a remarkable issue since coins were being used again in daily payments.

According to TURKSTAT, annual inflation rate was lower than the previous year's figure.

In addition, according to market survey, covering 1.867 products in 79 companies, prices of 186 products decreased and that of 1.496 products did not change.

Consequently, YTL operation did not result in add-on inflation. Rounding up effect of the zero removal operation in Turkey was less noticeable due to the already existing rounding up effect and hence, rather than having an inflationary impact, the operation is expected to bring to the forefront the determination to reduce inflation to single-digit numbers.

Table (2) Monthly Inflation Rates in Turkey (%)

Month	2004	2005
January	0,74	0,55
February	0,55	0,02
March	0,89	0,26
April	0,59	0,71
May	0,38	0,92
June	-0,13	0,10
July	0,22	-0,57
August	0,58	0,85
September	0,94	1,02
October	2,22	1,79
November	1,54	1,40
December	0,45	0,42

Source: TCMB.

Table (3) Annual Inflation Rates in Turkey (%)

Month	2004	2005
January	16,22	9,23
February	14,28	8,69
March	11,83	7,94
April	10,18	8,18
May	8,88	8,70
June	8,93	8,95
July	9,57	7,82
August	10,04	7,91
September	9,00	7,99
October	9,86	7,52
November	9,79	7,61
December	9,32	7,72

Source: TCMB.

Concerns regarding the possible inflationary impact of the cash changeover emerged repeatedly both before and during the cash changeover process, although several factors, such as strong competition in retailing and the vigilance of the consumers suggested that the impact would not be significant at the aggregate level.

70 % of people feared higher prices before the changeover. They thought that it may be an opportunity for sellers to raise the prices ones price lists and menus are reprinted with new conversion rates. They also feared that the cost of the operation might pass on customers with higher prices.

For the purpose of preventing undesirable impacts on prices, dual pricing came into force for a while. Retailers, manufacturers, consumer associations have agreed to freeze the prices in between November 2001 and end of March of 2002 In France. Anyhow, increase in prices was stated especially in restaurants and bars, small shops, taxis and movie theatres.

While it is extremely difficult to isolate the inflationary impact of the changeover from other exceptional and short-lived factors (such as adverse weather conditions in some parts of the euro area, increase in indirect taxes due to developments in energy prices there was no evidence of a significant impact on prices at the aggregate level as a result of the euro cash changeover.

Nonetheless, in 2002, the inflation rate in the Euro zone (2.2 %) realized below the 2001 figure (2.5 %).

According to Euro stat, EU's statistical agency, although conversion rates are not conveniently round numbers, the effect of transition to Euro on price increases in the first six months of 2002, ranged from 0.0 % to 0.16 % among member countries but did not exceed 0.2 %. However consumers appeared to notice and remember rounding up more than they notice rounding down.

With regard to cost of the operation, no reliable estimates of precise costs of changeover as a whole are available. ECB estimated the total cost at between 20-50 billion Euro, Deutsche Bank estimated it 32-42 billion Euro. European Banking Federation calculated 15 billion Euros for the banking system. As a principle, costs were paid where they arise. Banks did not charge the customers for the exchange. The only exception was on the re-payment of frontloading, which allowed 3 equal payments in certain dates of January.

4. Concluding

Starting from 70s, high inflation rates in Turkey raised some difficulties in the expression of monetary values, cash operations, bookkeeping and statistical records, accounting software, settlement systems. Moreover, high and persistent inflation caused higher banknote cycle figures and more complex cash operations. These factors affected production, distribution and storage costs adversely and resulted in higher operational risks. In addition to these, CBRT had to introduce higher value denominations frequently.

After the financial crisis in 2001, Turkey implemented a successful stabilization program. With inflation under control and the economy stabilized, restoring credibility in the currency and overcoming the logistical and technical issues of such high denominations were seen as critical. In 2004, the most challenging task of the Central Bank was to initiate, maintain and coordinate efforts in an objective to execute the redenomination of the currency on Jan 1st, 2005; first in country's history.

The benefits of the operation can be listed as follows:

- Technical and operational difficulties caused by multiple zeros were overcome. This operation brought about a general simplification in expressing monetary values and records.
- This operation was the indicator of the success in reducing inflation and determination to permanently bring inflation down to single-digit numbers.
- Public confidence towards national currency was re-established. A single-digit inflation accompanied with zero-dropping operation improved credibility of the national currency.
- The operation reduced resistance in expectations and helped abandon retrospective reference attitudes.
- Low inflation figures would avoid the need to alter denomination compositions for a long period.
- Operation gave the chance to renew the security features, sizes and design of the banknotes to stay ahead of counterfeiters and to take advantage of advances in security technology. Turkish Lira notes are among the most advanced in the world now.
- New denominations reduced banknote printing cost and eased transaction volumes for both commercial banks and the Central Bank.

As a Conclusion:

- Re-denomination was not only a zero dropping and new coin minting operation but a significant milestone.

- It is used as a monetary tool to direct the expectations to reduce inflation.
- Homework was well done in terms of inter institutional cooperation, communication, policy, planning of production/storage/distribution and IT infrastructure. We could not have done this operation without full co-operation of and considerable assistance from other public and also private institutions.
- Reform gave an opportunity to central banks to serve the public with good quality and secure banknotes and proper denomination mix.
- Success of the operation depends on the positive outcomes of the stabilization program.
- There is no doubt that the public welcomed the changes and the reform is the result and also an indicator of the changing dynamics in Turkey.

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