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## Distributional and Welfare Implications of the Recent Disinflation in Turkey

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## ABSTRACT

Turkey is among emerging economies that have experienced sharp declines (in the form of structural changes) in the level of inflation rate since the mid-1990s. Motivated by the availability of better data on financial system characteristics and distributional measures, this brief explores the distributional and welfare impacts of the recent reduction in inflation on the Turkish economy. In particular, the extent of financial dollarization and the inequality in the distribution of demand and term deposits are documented. This brief points out that apart from the classical adverse effects of inflation such as price distortions and wealth eroding; redistributive effects of inflation might be created by the particular way that the fiscal policy responds to the monetary policy.



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## CONTENTS

- 
1. Introduction | 3
- 
2. Structural Changes in Inflation | 5
- 
3. Inflation and Financial Dollarization in Emerging Economies | 6
- 
4. Deposit Positions, Income and Consumption Inequality Measures  
of Turkish Economy | 8
- 
5. Distributional and Welfare Implications of Disinflation | 12
- 
6. Policy Recommendations and Conclusion | 14
- 

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# DISTRIBUTIONAL AND WELFARE IMPLICATIONS OF THE RECENT DISINFLATION IN TURKEY

Enes Sunel\*

## 1. Introduction

Emerging economies that have a record of high inflation rates have been experiencing disinflation since the mid-1990s. The goal of this brief is to shed light on potential policy measures in regards to the distributional and welfare consequences of this recent disinflation in emerging economies. These policy measures arise as the outcome of an effort to reconcile the disinflation phenomenon with the characteristics of the financial system of an emerging economy.

Empirical literature on the household portfolio heterogeneity convey that (i) the likelihood of holding interest-bearing assets increases with income and wealth.<sup>1</sup> (ii) Poor individuals tend to use cash for a larger portion of their total transactions than the rich.<sup>2</sup> (iii) The poor are more likely to consider inflation as a top national issue.<sup>3</sup> <sup>4</sup> These findings lead to the classical idea that inflation acts as a regressive consumption tax for the poor.<sup>5</sup>

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1. Mulligan, Casey and Sala-i-Martin, Xavier, 2000, "Extensive Margins and the Demand for Money at Low Interest Rates", *Journal of Political Economy*, 108(5), pp. 961-91.

2. Avery, Robert B., Gregory E. Elliehausen, Arthur B. Kennickell, 1987, "Changes in the Use of Transactions Accounts by American Families" *Federal Reserve Bulletin*, 72 (2), pp. 87-107.

3. Easterly, William Fischer, Stanley, 2001. "Inflation and the Poor", *Journal of Money, Credit and Banking*, Blackwell Publishing, vol. 33(2), pp. 160-78.

4. This conclusion has been drawn by analyzing household polling data for 38 countries.

5. See, Erosa, Andres, Ventura, Gustavo, 2002. "On Inflation as a Regressive Consumption Tax", *Journal of Monetary Economics*, Elsevier, vol. 49(4), pp. 761-795.

When transfers are uniform, disinflation could be welfare reducing since the government redistributes resources from the poor to the rich.

The focus of this brief on adverse effects of inflation is confined to: (i) wealth eroding effect and (ii) asymmetric taxation of consumption that manifests itself as an increase in the real transactions costs incurred (due to lower demand for real balances). This approach obviously rules out the redistributive role of inflation among parties of nominal debt contracts that is, surprise inflation being desirable for debtors at the expense of creditors due to deflation of the nominal debt. However, financial dollarization feature of emerging economies dampen this channel. As it is exemplified by findings of the related empirical literature in Section 3, an important fraction of financial assets in emerging economies are denominated in foreign currency. In a financially dollarized small open economy, the real return of foreign currency denominated deposits is ultimately determined by exogenous factors, that is, the world interest rate.<sup>6</sup> Therefore, a higher degree of financial dollarization would cause the real return of interest-bearing assets to be less responsive to the domestic inflation rate and therefore mute the redistribution among nominal contract holders.

Given the described characteristics of the financial system in emerging economies, the monetary and fiscal interactions (i.e. how the seigniorage revenues will be used in the consolidated government budget) become essential. Such interactions govern the redistribution scheme linked to inflation taxation, which could potentially have strong wealth effects. There is already a strong view in the literature that inflation and fiscal deficits are positively correlated. Yet, one has to go deeper in analyzing the components of the fiscal deficit. To this end, if inflation tax revenues are used to finance aggregate transfers to households, then somewhat surprisingly, disinflation could be welfare “reducing”. This unusual implication of disinflation could emerge because of the fact that although the poor hold a portfolio that is biased towards cash, in absolute terms, they hold less money than the rich, in part because they need less money to consume less, and they consume less because they are poorer. As a result, under disinflation, the poor are worse off because they lose a lump-sum transfer of the same size (regardless of wealth) as the rich, which is more than what they pay less (in inflation tax and transactions costs). Therefore, under disinflation, the government could be aggressively redistributing wealth from the poor to the rich resulting in an aggregate welfare loss. On the other hand, if inflation tax revenues finance wasteful government expenditures, then the redistribution by government policy is shut down and disinflation could become welfare “enhancing”. Welfare implications stemming from alternative redistribution schemes adopted by the government are analyzed in greater detail in Section 5.

The rest of the brief is organized as follows. Section 2 documents the structural change episodes in emerging economies. Section 3 reviews the related literature on financial dollarization in relation to inflation. Section 4 provides data on some distributional

6. Under the assumptions of the law of one price and the interest parity.

features of the Turkish economy. Section 5 reflects on the welfare consequences of structural changes in inflation and finally Section 6 mentions policy recommendations and concludes.

## 2. Structural Changes in Inflation

The aim in this section is to document that the level of inflation in emerging economies has declined substantially since the mid-1990s compared to the preceding two decades. Considering that such economies have been labeled as “*chronic-inflation*” economies, recent disinflation emerges as a phenomenon whose implications might be worth to explore. Table 1 displays the time series averages of annual CPI inflation rates for 10 emerging and/or developing countries for two periods that represent (i) the inflationary period of the mid-1970s to the mid-1990s and (ii) the disinflationary period of the mid-1990s to 2008, respectively. The particular break dates for each country are determined by running a structural break test (Chow test) on the level of inflation. A quick glance to the table suggests that whether initially high or low, inflation has declined at least by 50% in these countries. Moreover, the median decline in the average annual inflation rate among 84 emerging and/or developing economies during the same period is 45%. This policy brief takes this phenomenon as given and reflects on the potential implications of it by paying particular attention to the financial system characteristics of emerging economies. The next section documents dollarization in the chronic-inflation economies as one of those important characteristics.

The level of inflation in emerging economies has declined substantially since the mid-1990s compared to the preceding two decades.

**Table 1. Recent Disinflation in Emerging Economies<sup>7,8</sup>**

Country	High (Period)	Low (Period)	% Change
Argentina	115 (75-94)	6 (95-08)	-95
Bolivia	35 (73-83)	9 (84-08)	-74
Colombia	24 (72-94)	11(95-08)	-54
Egypt	14 (72-95)	6 (96-08)	-57
Mexico	53 (74-88)	14 (89-08)	-74
Paraguay	18 (72-95)	9 (96-08)	-50
Peru	70 (74-91)	12(92-08)	-83
Thailand	11 (72-82)	4 (83-08)	-64
Turkey	60 (77-02)	8 (03-08)	-87
Uruguay	63 (75-94)	11 (95-08)	-83
Mean (of 84)	18	10	-45
Median (of 84)	11	6	-43

7. Source: International Financial Statistics Database of the IMF.

8. Data points that corresponds to an annual inflation rate of more than 200% are excluded.

Dollarization could emerge because the value of local currency becomes volatile due to various reasons, such as sovereign default risk or unsustainable exchange rate regimes that prepare the ground for speculative attacks driven by international capital inflows.

### 3. Inflation and Financial Dollarization in Emerging Economies

The term “dollarization” is mainly used to describe the substitution of local currency denominated financial assets with those that are denominated in foreign currency. Dollarization could emerge because the value of local currency becomes volatile due to various reasons, such as sovereign default risk or unsustainable exchange rate regimes that prepare the ground for speculative attacks driven by international capital inflows. Moreover, if there is inflation risk, then the local currency lacks its store of value function. Therefore, dollarization in emerging economies has been understood traditionally as a currency substitution phenomenon by researchers. However, the empirical literature suffers a definitional problem due to lack of data.<sup>9</sup> What is analyzed as “currency substitution” is actually “asset substitution”, since the dollarization of interest-bearing financial assets is more predominant. For example, in the period 2005:4-2008:4, the average share of foreign currency denominated demand and term deposits (with a maturity more than 6 months) in Turkey are 44% and 72% respectively. (Source: BRSA<sup>10</sup>).

**Table 2. Financial Dollarization in Emerging Economies<sup>11</sup>**

Country	Financial Dollarization	Period
Argentina	34	1981-2004
Bahrain Kingdom	38	1984-1997
Bolivia	66	1980-2004
Bulgaria	45	1991-2004
Croatia	67	1993-2004
Ecuador	24	1990-1999
Egypt	35	1980-2004
Georgia	69	1993-2004
Ghana	30	1995-2004
Jamaica	23	1992-2004
Lebanon	62	1993-2004
Lithuania	39	1993-2004
Netherlands Antilles	15	1975-2004
Paraguay	45	1988-2004
Peru	54	1980-2004
Philippines	25	1982-2004
Saudi Arabia	21	1981-2004
Sierra Leone	29	1995-2004
Suriname	45	1998-2004
Tanzania	28	1993-2004
Trinidad and Tobago	23	1993-2004
Turkey	41	1986-2004
Uruguay	77	1981-2004

9. See Ize, Alain, Levy Yeyati, Eduardo, 2003. “Financial Dollarization”, *Journal of International Economics*, Elsevier, vol. 59(2), pp. 323-347.

10. Banking Regulation and Supervision Agency.

11. Source: Levy Yeyati, Eduardo, 2006. “Financial Dollarization: Evaluating The Consequences” *Economic Policy*, CEPR, CES, MSH, vol. 21(45), pp. 61-118.

A strand of recent literature appreciates this definitional issue and analyzes the extent and reasons of financial dollarization in emerging economies. Below are some important observations of this literature:

- The cross-country average of the share of dollarized deposits at the end of 2000 was 35% in all developing economies. Table 2 above exemplifies financial dollarization (share of dollar denominated deposits) in 23 emerging economies and shows that in the last two decades, many emerging economies had a financial dollarization rate more than 40%. In particular, the dollarization rate for Turkey in 1986-2004 is 41%. Note that dollar linked domestic public debt is not taken into account while reporting these shares.
- Dollarization of deposits is coupled with dollarization of loans as well. The elasticity of dollarized loans with respect to dollarized deposits is equal to 0.73 for 100 countries including emerging, developing and transition economies in the period 1990-2001. This finding illustrates that a growth of 1 percentage points in dollarized deposit funds are accompanied by a 0.73 percentage growth in dollarized loans.<sup>12</sup>
- For the same sample of countries in bullet one, correlation between the average deposit dollarization rate and inflation rate is 0.50. Therefore, there is a positive relationship between financial dollarization and the inflation elasticity of monetary shocks, supporting the conjecture that dollarization is an inflationary economy phenomenon.
- There is a positive relationship between the likelihood of having an inflationary past and the degree of dollarization.<sup>13</sup>
- Only countries that has managed to keep inflation below 35% per annum between 1990 and 2005, do not exhibit high dollarization (i.e., a FX deposit share of more than 50%) between 2000 and 2004.<sup>14</sup>

There is a positive relationship between financial dollarization and the inflation elasticity of monetary shocks, supporting the conjecture that dollarization is an inflationary economy phenomenon.

What is the significance of financial dollarization as far as radical changes in the inflation rate are concerned? Theoretically, under perfect pass-through, the real value of interest-bearing dollarized assets becomes fixed and the interest-bearing segment of the financial system fully dollarizes.<sup>15</sup> Consequently, say if the local currency *depreciates*, the increase in the interest income earned on dollarized assets (implied by the interest parity condition) will be offset exactly by the increase in the domestic inflation rate (implied by the exchange rate pass-through). Therefore, the real return of these assets become strongly correlated to the world interest rate, so that changes in the depreciation rate

12. De Nicol'o, Gianni, Ize, Alain, Honohan, Patrick, 2003. "Dollarization of the Banking System: Good or Bad?" *IMF Working Papers* 03/146, International Monetary Fund.

13. Reinhart, Carmen M., Rogoff, Kenneth, Savastano, Miguel A., 2003. "Addicted to Dollars" *NBER Working Papers* 10015, National Bureau of Economic Research, Inc.

14. Honohan, Patrick, 2007. "Dollarization and Exchange Rate Fluctuations," *Policy Research Working Paper Series*, 4172, The World Bank.

15. See Ize, Alain, Levy Yeyati, Eduardo, 2003. "Financial Dollarization" *Journal of International Economics*, Elsevier, vol. 59(2), pp. 323-347.

One could conclude that the major role of financial dollarization in an economy (prone to inflation risk) is that it provides a hedge against variations in inflation.

of the currency has no effect on the real return of these assets, if the world interest rate is intact. Empirical treatment of the relationship between the pass-through coefficient and deposit dollarization shows that a 10% increase in dollarization is associated with an 8% increase in pass-through.<sup>16</sup> Therefore, the stronger the transmission of currency depreciation to domestic inflation is, the stronger the financial dollarization.

In these lines, one could conclude that the major role of financial dollarization in an economy (prone to inflation risk) is that it provides a hedge against variations in inflation. Moreover, due to rate of return equivalence, the real return of local currency denominated deposits would closely follow the real return of dollarized deposits, causing the former to serve as an inflation hedge as well.<sup>17</sup>

Financial dollarization might have non-trivial consequences in an emerging economy with unequal distributions of financial assets because households' ability to protect themselves against inflation would then show variation. To that end, we include the empirical analysis of inequality in the distributions of demand and term deposits (for the case of Turkey) in the next section.

#### 4. Deposit Positions, Income and Consumption Inequality Measures of Turkish Economy

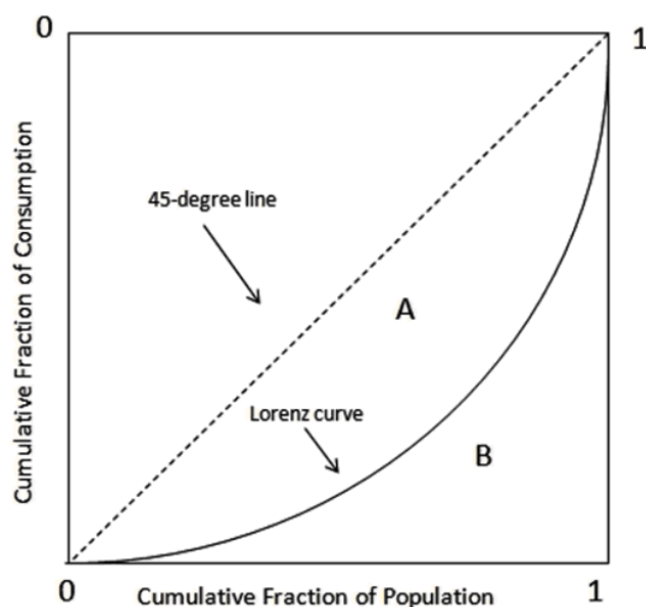
Lorenz curves provide powerful insights about the distributions of economic variables. Characteristically, a Lorenz curve (which is exemplified in Figure 1 below) is plotted on an x-y plane where the x-coordinate displays the *cumulative fraction of the population* and the y-coordinate represents the *cumulative share of the economic variable held (utilized)* by the corresponding value on the x-coordinate. The 45-degree line that connects the origin (0,0) and the point (1,1) represent the perfect equality case. For instance, if the Lorenz curve of consumption happens to be the straight 45-degree line, this means that each *quintile* (ordered cohorts of households that count as the 20% of total population) consumes 20% of total consumption. Therefore, in that case we say that quintiles are equal in terms of consumption. Consequently, if the Lorenz curve is *bowed rightward* from the straight 45-degree line, then the inequality in the relevant economic variable is higher than the perfect equality case. To quantify the degree of inequality, the Gini coefficient is computed. Following the illustration in Figure 1, the Gini coefficient would be computed as the ratio  $A/(A+B)$ , that is the ratio of the area between the 45-degree line and the Lorenz curve, to the total area under the 45-degree line. The Gini coefficient takes values between 0 and 1 whereas 0 represents the perfect equality case and 1 represents the case in which one household makes the total consumption.

16. Honohan, Patrick, Shi, Anging, 2001. "Deposit dollarization and the financial sector in emerging economies" *Policy Research Working Paper Series*, 2748, The World Bank.

17. See Berument, Hakan, Guner, Nuray, 1997. "Inflation, Inflation Risk and Interest Rates: A Case Study for Turkey" *METU Studies on Development*, 24 (3) 1997, 319-327 on inflation hedge role of term deposits in Turkey for the period 1987-1997.



Figure 1. Inequality Represented by a Lorenz Curve



The distribution of demand and term deposits could highlight important features of financial wealth inequality in Turkish economy given that the average share of total deposits to total financial assets in the period 1970-2006 is 61%.

Figure 2 below illustrates Lorenz curves of demand and term deposits for Turkey, Peru, Bolivia and Thailand.<sup>18</sup> Following the definitions above, the figure clearly shows that, demand and term deposits distributions display substantial inequality. The Gini coefficients implied by the Lorenz curves plotted in Figure 2 vary between 65% and 95%. The straight-red plots are Lorenz curves for term deposits and the dashed-black plots are Lorenz curves for demand deposits. For Peru, Bolivia and Thailand, the degree of inequality in demand deposits positions are higher than that of term deposits. For the case of Turkey, both demand and term deposits positions exhibit similar inequality patterns.

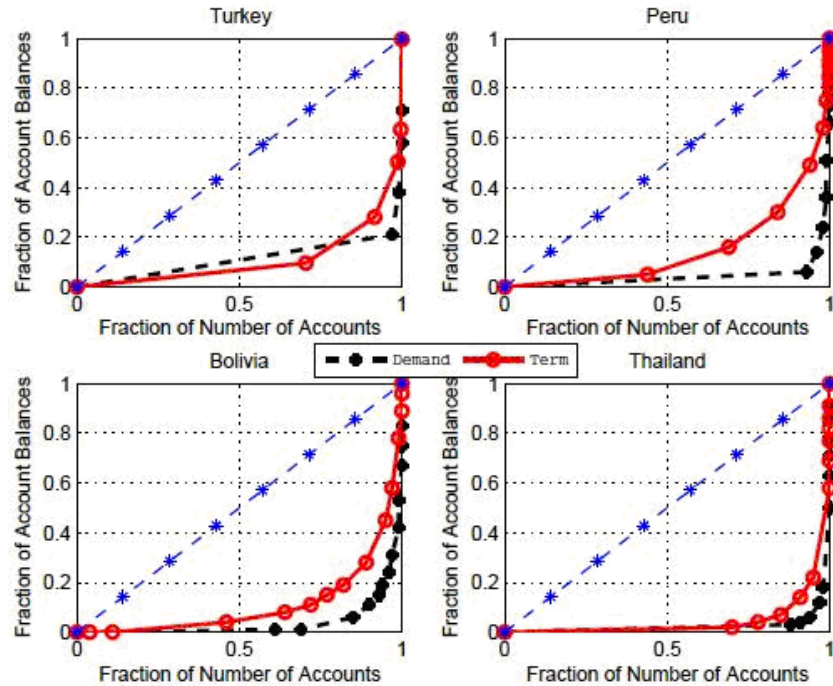
The distribution of demand and term deposits could highlight important features of financial wealth inequality in Turkish economy given that the average share of total deposits to total financial assets in the period 1970-2006 is 61% (Source: SPO<sup>19</sup>).

18. The data sources are: Autoridad de Supervision del Sistema Financiero (Bolivia), Central Reserve Bank of Peru, Bank of Thailand and Banking Regulation and Supervision Agency (Turkey).

19. State Planning Organization, Main Economic Indicators. Table 4.7 in <http://www2.dpt.gov.tr/dptweb/esg/esg-i.html>.

Figure 2. Inequality in Demand and Term Deposits Holdings in Emerging Economies

A few number of accounts represent a large share in total account balances indicating substantial inequality in the holdings of both demand and term deposits.



Disaggregated deposits distribution data for Turkish economy are reported in Table 3. Columns denote account groups that are classified by the sizes of accounts. Rows 1 to 4 on the other hand, report shares of account balances and shares of number of accounts for each account group. These statistics clearly show that a few number of accounts represent a large share in total account balances indicating substantial inequality in the holdings of both demand and term deposits. Finally, the last row in Table 3 reports the share of term deposits within each account group. As individuals get wealthier, their portfolio becomes biased towards interest-bearing deposits.

Table 3. Summary Statistics on the Distribution of Demand and Term Deposits in Turkey

Turkey (2002-2008)	Account Sizes				
	up to 10 K <sup>a</sup>	10 K-50 K	50 K – 250 K	250 K-1,000 K	1,000 K and up
Distribution of DD <sup>b</sup> Accounts Balances	21.11 <sup>c</sup>	17.13	19.32	13.02	29.41
Distribution of DD Number of Accounts	97.34	1.97	0.59	0.08	0.02
Distribution of TD <sup>d</sup> Accounts Balances	9.66	18.53	22.30	13.07	36.43
Distribution of TD Number of Accounts	70.45	21.16	7.12	0.96	0.30
Share of Term Deposits Within Group	64.03	82.72	83.54	81.29	84.13

<sup>a</sup>In Turkish Liras, <sup>b</sup>Demand deposits

<sup>c</sup>In percentage terms, the average over the period, <sup>d</sup>Term deposits

Table 4 below illustrates statistics on income and consumption inequality in Turkey for the low inflation period 2004-2008.<sup>20</sup> 1<sup>st</sup> quintile represents the poorest 20% of households, when households are ordered according to income (consumption). Despite being lower than inequality in deposits positions, income and consumption inequality shows up as a problem for Turkish economy. In particular, the share of the 5<sup>th</sup> income quintile is more than 8 times of the share of the 1<sup>st</sup> income quintile. Under the absence of financial markets with great depth, thanks to social networks, government transfers and other informal insurance mechanisms that the top quintile-to-bottom quintile ratio in consumption reduces to 6. Both inequality indicators are qualitatively stable throughout the years for which the data are available. Gini coefficients that are computed from the approximate Lorenz curves for income and consumption are 39% and 32% respectively.

**Table 4. Income and Consumption Inequality in Turkey, 2004-2008**

<u>Household Income</u>					
Avg. of 2004-2007	1 <sup>st</sup> Quintile	2 <sup>nd</sup> Quintile	3 <sup>rd</sup> Quintile	4 <sup>th</sup> Quintile	5 <sup>th</sup> Quintile
	5.26 <sup>a</sup>	10.03	14.86	21.75	48.1
<u>Consumption</u>					
Avg. of 2004-2008	1 <sup>st</sup> Quintile	2 <sup>nd</sup> Quintile	3 <sup>rd</sup> Quintile	4 <sup>th</sup> Quintile	5 <sup>th</sup> Quintile
	7.09	11.95	16.28	22.23	42.45

<sup>a</sup>Percentage share of quintiles in total household income and consumption.

Source: Household Budget Survey (2004-2005), Income and Living Conditions Survey (2006-2007) and Consumption Expenditures Survey conducted by Turkish Statistical Institute.

Under the absence of financial markets with great depth, thanks to social networks, government transfers and other informal insurance mechanisms that the top quintile-to-bottom quintile ratio in consumption reduces to 6.

Finally, Table 5 lists the weights of potential sources of income and the share of income quintiles for each income source in Turkish economy. First column reports the aggregate share of income types in total income for the average of the years 2006 and 2007. Note for the moment that transfers make some 20% of total household income. A closer look at columns 2-6 reveals that the distributions of wages and salaries, entrepreneurial income, and social transfers among income quintiles are similar to the distribution of total income.

20. Data that we used to construct Tables 4 and 5 can be reached at [http://www.tuik.gov.tr/VeriBilgi.do?tb\\_id=24&ust\\_id=7](http://www.tuik.gov.tr/VeriBilgi.do?tb_id=24&ust_id=7)

**Table 5. Inequality and Income Types, 2006-2007**

Avg. of 2006-2007 Types of Income	Aggregate Share of Types	Share of Quintiles within Type				
		1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
Total	100	4.47 <sup>a</sup>	9.17	14.19	21.26	50.89
Wage and Salary*	40.29	2.63	8.59	14.42	22.95	51.41
Casual	3.84	26.79	26.75	20.89	17.07	8.50
Entrepreneurial	23.72	4.89	8.80	11.49	16.46	58.36
Rental	3.58	1.89	3.70	6.68	16.00	71.74
Asset*	6.54	2.44	6.55	11.58	19.55	59.87
Social Transfers*	17.98	3.44	8.53	17.75	26.34	43.93
Inter-household Transfers*	2.77	11.45	13.79	15.94	19.30	39.52
Other	1.3	5.30	9.45	17.12	25.07	43.06

<sup>a</sup>Percentage share of the relevant income quintile. Quintiles are ordered according to total income.  
Source: Income and Living Conditions Survey (2006-2007) conducted by TURKSTAT.

Inflation has the following two adverse effects: (i) a wealth eroding effect and (ii) an increase in the inefficient real transactions costs incurred due to lower demand deposit holdings that facilitate transactions.

## 5. Distributional and Welfare Implications of Disinflation

Structural changes in the inflation rate might have significant distributional and welfare consequences in emerging economies in which financial markets are rather underdeveloped, financial dollarization is predominant and asset portfolio of consumers exhibits substantial inequality. Indeed, among the underlying reasons of financial dollarization are an inflationary past and the absence of a rich menu of financial instruments that are easily accessed by any segment of the society. Given these features of emerging economies, from the perspective of consumers, inflation has the following two adverse effects: (i) a wealth eroding effect and (ii) an increase in the inefficient real transactions costs incurred due to lower demand deposit holdings that facilitate transactions. If the portfolio of the poor is biased towards non-interest-bearing assets (simply cash), then inflation might have important wealth effects on these individuals through inflation tax.

Given the described characteristics of the financial system in Turkey, the monetary and fiscal interactions (i.e. how the seigniorage revenues will be used in the consolidated government budget) become essential, since they govern the redistribution scheme linked to inflation taxation, which could potentially have strong wealth effects. There is already a strong view in the literature that inflation and fiscal deficits are positively correlated. Yet, one has to go deeper in analyzing the components of the fiscal deficit. To this end, if inflation tax revenues are used to finance aggregate transfers to households, then somewhat surprisingly, disinflation could be welfare “reducing”. This unusual implication of disinflation could emerge because of the fact that although the poor hold a portfolio that is biased towards cash, in absolute terms, they hold less money than the rich, in part because they need less money to consume less, and they consume less because they are poorer. As a result, when there is disinflation,

the poor are worse off because they lose a lump-sum transfer of the same size (regardless of wealth) as the rich, which is more than what they pay less (in inflation tax and transactions costs). Therefore, when there is disinflation, the government could be aggressively redistributing wealth from the poor to the rich resulting in an aggregate welfare loss. On the other hand, if inflation tax revenues finance wasteful government expenditures, then the redistribution by government policy is shut down and disinflation could become welfare “enhancing”. Sunel (2010)<sup>21</sup> shows that under lump-sum transfers, a model economy that tends to replicate Turkish economy for the period 2004-2009 agrees with foregoing 1.8% of aggregate real consumption in order to keep living in a 10% quarterly inflation rate world rather than living in a world with a quarterly inflation rate of 0%. On the other hand, under no government redistribution, the model economy requires a 3.6% increase in the aggregate real consumption in order to keep living in the 10% quarterly inflation rate world rather than living in a world with a quarterly inflation rate of 0%, establishing the above conjecture.

Table 6 below is taken from Sunel (2010) and it shows the welfare impacts of disinflation when lump-sum transfers respond to inflation and government spending is intact. The first row shows the average welfare gain of the poorest quintile, when households are ordered from low to the rich according to their total deposit positions. The second row reports the welfare gain of the median household and the third row reports the average welfare gain of the richest quintile. The fourth row reports the aggregate welfare gain of the economy. The table clearly shows that disinflation is desirable for the rich at the expense of the poor.<sup>22</sup>

When there is disinflation, the government could be aggressively redistributing wealth from the poor to the rich resulting in an aggregate welfare loss.

**Table 6. Inflation and Welfare When Uniform Transfers Respond to Monetary Policy**

	Welfare Gains (Benchmark= 10%, Transfers Respond to Inflation)							
	-0.50%	0.00%	2%	5%	7%	20%	30%	50%
1st Quintile	-12.21	-9.99	-4.24	-2.13	-1.15	2.61	4.35	6.42
Median	-3.38	-2.77	-1.92	-0.95	-0.50	1.14	1.91	2.78
5th Quintile	6.81	5.57	-0.04	0.01	0.02	-0.08	-0.15	-0.32
Aggregate	-2.19	-1.80	-1.98	-0.98	-0.52	1.17	1.96	2.84

On the other hand, if lump-sum transfers are fixed and the wasteful government spending responds to inflation, then welfare gains associated to disinflation shift up. The main reason behind this result is the reduced wealth effects due to lowered magnitude of wasteful government spending. Hence, the welfare loss of the poorest quintile is reduced substantially and the rest of the economy enjoys a welfare gain.

21. Sunel, Enes, 2010, “On Inflation, Wealth Inequality and Welfare in Emerging Economies” *mimeo*, University of Maryland, Department of Economics.

22. Second column shows that a disinflation of quarterly 10% implies a welfare loss of 10% for the poorest quintile and a welfare gain of 5.5% for the richest quintile in consumption equivalent units.

**Table 7. Inflation and Welfare When Wasteful Government Spending Responds to Monetary Policy**

	Welfare Gains (Benchmark= 10%, Government Spending Respond to Inflation)							
	-0.50%	0.00%	2%	5%	7%	20%	30%	50%
1st Quintile	-3.68	-2.54	0.86	0.48	0.28	-0.67	-1.17	-1.88
Median	2.96	2.57	1.21	0.66	0.38	-0.91	-1.56	-2.45
5th Quintile	9.70	7.99	1.29	0.71	0.40	-0.98	-1.67	-2.62
Aggregate	4.22	3.61	1.18	0.65	0.37	-0.89	-1.53	-2.42

Given that the dollarized term deposits offer a return which is less vulnerable to inflation, portfolio heterogeneity among the poor and the rich might drive substantial welfare effects of inflation.

## 6. Policy Recommendations and Conclusion

Turkey has been experiencing disinflation, which manifests itself as a structural change in the level of the inflation rate since the beginning of the new millennium. Such radical changes in the level of inflation might have non-trivial distributional and welfare consequences in Turkish economy that is financially dollarized to a certain degree. In particular, demand deposits that are vulnerable to inflation represent an important fraction of total deposits owned by the poor. Given that the dollarized term deposits offer a return which is less vulnerable to inflation, portfolio heterogeneity among the poor and the rich might drive substantial welfare effects of inflation. Moreover, these welfare effects are either reinforced or dampened by the particular way that fiscal and monetary policymaking interact with each other.

Following the guideline of normative analysis, it is possible to reach to the conclusion that inflation actually might not be bad for the poor if the government accompanies inflationary finance with fiscal policies that are well-crafted to redistribute resources from the rich to the poor. This could be achieved by increasing lump-sum transfers (that crucially do not depend on anyone's wealth) such as educational or precautionary health care services during inflationary episodes. On the other hand, if inflationary episodes are only in accordance with expansions in the wasteful government spending, then the commonly known distortions created by high inflation will be at play, reducing the welfare of the aggregate economy.

For the case of Turkey, Table 5 illustrates a fact that has to capture the attention of policymakers. The distribution of social transfers appears to be such that as people get richer, they earn more of social transfers income. This hints that transfers in Turkish economy are not of redistributive nature but rather depend on economic actions of individuals. Therefore, inflationary finance would not create asymmetric wealth effects in favor of the poor. Instead, it would only increase inefficiencies such as price distortions or wealth eroding in the economy. As a result, if the central bank behaves reluctant in stabilizing inflation further, then transfers schedule has to be redesigned to ensure redistribution. On the other hand, if the current transfers scheme is preserved, then the analysis in this brief suggests that the monetary authority has indeed a good reason to keep inflation lower.

Note that the analysis in this brief so far supposed that structural changes in the inflation rate occur instantaneously. However, from a policymaking point of view, it is hard to think so. Especially under flexible exchange rate regimes with inflation targeting, it would be realistic to think of *transitional dynamics* implications of gradual changes in inflation. Such dynamics of disinflation might drive strikingly different results compared to what is presented in Tables 6 and 7. For instance, consider the economy with lump-sum transfers that respond to inflation. In that economy, as Table 6 illustrates, aggregate welfare is lower with inflation in part because seigniorage revenues and redistributive transfers are lower when the inflation is low. However, if inflation drops gradually, since the aggregate economy is going to accumulate real balances over time, seigniorage revenues will follow an increasing time profile before diminishing to the low-inflation regime level. If the fiscal side of the government responds to this time profile of inflation tax revenues by increasing lump-sum transfers over time, the government would be able to alleviate the transfer-income loss of the poor, mitigating the adverse welfare result. On the other side of the coin, if wasteful government spending increases over the transition phase, adverse wealth effects are going to be induced and the welfare gain of disinflation that is presented in Table 7 would shrink. Therefore, as far as the analysis in this brief is concerned, under the presumed financial market characteristics of an emerging economy, it is utmost important for fiscal and monetary policymakers to coordinate in the *determination of fiscal outlays composition* and the *timing of adjustments to inflation targets*.

Turkey is among emerging economies that have experienced sharp declines (in the form of structural changes) in the level of inflation rate since the mid-1990s. Motivated by the availability of better data on financial system characteristics and distributional measures, this brief explores the distributional and welfare impacts of the recent reduction in inflation on the Turkish economy. In particular, the extent of financial dollarization and the inequality in the distribution of demand and term deposits are documented. This brief points out that apart from the classical adverse effects of inflation such as price distortions and wealth eroding; redistributive effects of inflation might be created by the particular way that the fiscal policy responds to the monetary policy.

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