Düsseldorf Institute
for Competition Economics

DISCUSSION PAPER

No 32

The Bank Lending Channel in Turkey: Has it Changed after the Low Inflation Regime?

A. Nazif Catik,
Mehmet Karaçuka

September 2011

HEINRICH HEINE
UNIVERSITÄT DÜSSELDORF

IMPRINT

DICE DISCUSSION PAPER

Published by
Heinrich-Heine-Universität Düsseldorf, Department of Economics, Düsseldorf Institute for Competition Economics (DICE), Universitätsstraße 1, 40225 Düsseldorf, Germany

Editor:

Prof. Dr. Hans-Theo Normann
Düsseldorf Institute for Competition Economics (DICE)
Phone: +49(0) 211-81-15125, e-mail: normann@dice.uni-duesseldorf.de

DICE DISCUSSION PAPER

ISSN 2190-9938 (online) – ISBN 978-3-86304-031-4

The Bank Lending Channel in Turkey: Has it Changed after the Low Inflation Regime?[*]

A.Nazif Catik
(Corresponding Author)
Department of Economics
Ege University
35040 Bornova / Izmir
a.nazif.catik@ege.edu.tr

Mehmet Karaçuka
Department of Economics
Ege University
35040 Bornova / Izmir
mehmet.karacuka@ege.edu.tr

September 2011

Abstract

In this paper we aim to analyze the role of credit channel in the monetary transmission mechanism under different inflationary environments in Turkey covering the period 1986:1-2009:10. Our results suggest that traditional interest rate channel is only valid for the post-inflation targeting period. This variable is also more effective monetary policy tool in terms of its impacts on economic activity in the both regimes. Credit shocks itself have significant power on economic activity and prices. However, the effect of monetary shocks on credit volume is very limited especially in the low inflation regime.

[*] This paper has been completed during a stay of Mehmet Karaçuka as a Guest Scholar at Heinrich Heine Universität Düsseldorf, Düsseldorf Institute for Competition Economics (DICE), with a scholarship from the Turkish Council of Higher Education. The author thanks both institutions for providing the opportunity to benefit from the inspiring academic surrounding at DICE. We are also grateful for comments and suggestions of two anonymous referees. A revised version of this paper will be published in *Applied Economics Letters.*

1. Introduction

Although there is a considerable amount of literature on the effects of monetary policy on the real economy, only few consider the non-linearity and regime changes in the financial system. Turkish economy presents an interesting case to analyze the transmission when there is a regime change which leads non-linearity in the process. In recent decade Turkish economy has undergone major transformations since the financial crisis in 2001. Prior to the destructive financial crisis of 2001, pubic deficits and high real interest rates shaped an unstable financial system which let banks credit rationing, and credit channels were limited for households and small enterprises. Major reforms in government spending and in banking system have provided a stable growth in the post-crisis era. Also high growth rates around the globe and low interest rates in the advanced economies attracted substantial foreign capital to Turkey that increased the available funds and led low interest rates.

The effects of monetary policy on the real sector via bank lending and interest rate channels have been analyzed in various studies. Bernanke and Blinder (1988) using an expanded IS-LM framework to include the bank loans market find that monetary policy works partly by affecting the affecting the composition of bank assets. Bernanke and Blinder (1992), Christiano, Eichenbaum and Evans (1998), Bayoumi and Morsink (2001) and Suzuki (2004) show the effects of monetary policy frameworks on the real economy for advanced countries. Recently, Krusec (2009) investigates the transmission of monetary policy shocks in the euro area after 1999 and finds restrictive monetary policy shocks to reduce inflation will be at a cost of depressing economic activity.

Regarding the time series application of monetary transmission channel in Turkey we find limited number of studies based on VAR model applications (Çiçek, 2005; Güloğlu and Orhan, 2008). We find only one study (Başçı et al., 2007) analysing the monetary transmission by accounting for the change in the monetary policy regime after 2001. They show that low and stable inflationary environment resulting from the implementation of structural reforms after the 2001 have increased the importance of interest rate and credit channels in Turkey compared to pre-crisis period.

The main weakness of the studies outlined above is that they have ignored the nonlinearity and the change in the relationship after the implementation of inflation targeting. Given the recent developments in terms of monetary and fiscal policies, it can be expected that there is also a regime change in the functioning of credit channel in the Turkish economy. This study attempts to fill this gap in the literature by examining the credit transmission channel with a Threshold Vector Autoregression (TVAR) model as a nonlinear estimation framework.

The rest of the paper is structured as follows. Our data are introduced in the following section. The empirical findings of the paper are presented in section three. Finally, the paper ends with concluding remarks.

2. Data

We use monthly data covering the period 1986:1-2010:11. The data are collected from the International Financial Statistics (IFS) Database of IMF. The vector of endogenous variables Y_t is given as follows,

$$Y_t' = \left[lip_t \; lcpi_t \; lm1_t \; intbrate_t \; lcre_t \right], \qquad (1)$$

Where lip_t represents industrial production used as a measure of economic activity. $lcpi_t$ is the log of consumer price indices used as a representative of general price level. As for the monetary policy variables we consider M1 narrow money $lm1_t$ and interbank rate $inbrate_t$. $lcreus_t$ is total volume of credits in the financial system in terms of US dollars. To account for international economic events on the conduct of monetary policy and also get rid of price puzzle in the VAR model, we also employ the following vector of exogenous variables (Peersman and Smets, 2003).

$$X_t' = \left[lpetri_t \;\; ffr_t \;\; lindus_t \;\; lner_t \right] \quad (2)$$

$lpetri_t$ is the log of oil average oil prices, ffr_t is US federal funds rate, $lindus_t$ is the log of US industrial production index, $lner_t$ is the log of US/TL nominal exchange rates.

Even though all variables are integrated of order one, the VAR model is estimated in levels [1]. Fuller (1976) demonstrated that differencing does not help to achieve asymptotic efficiency in an autoregression. In a VAR framework, differencing throws information away, while it produces almost no gain. This drawback has also been considered by numerous studies investigating monetary transmission channels (see for example, Bernanke and Blinder, 1992 and Bernanke and Gertler, 1995).

[1] In order to examine unit root properties of the data we conduct ADF and PP unit root tests. These tests suggest all variables are integrated of order one. We also applied Zivot and Andrews (1992) unit root test, which allows for one endogenous structural break in the series. This test rejects the null hypothesis of a unit root with a break for all variables. The tests are not reported but are available upon request.

3. Empirical Results

In order to examine credit channel in a nonlinear framework, we consider the following threshold VAR (TVAR) model (Balke, 2000):

$$Y_t = I[c_{t-d} \geq \gamma]\left(A_0^1 + \sum_{i=1}^{p} B_i^1 Y_{t-i} + \sum_{i=1}^{q} C_i^1 X_{t-i} \right) + I[c_{t-d} < \gamma]\left(A_0^2 + \sum_{i=1}^{p} B_i^2 Y_{t-i} + \sum_{i=1}^{q} C_i^2 X_{t-i}) \right) + u_t \quad (3)$$

where Y_t and X_t are previously defined vector of endogenous and exogenous variables respectively. B and C are the parameter matrices of endogenous and exogenous variables which are allowed to vary across the high (Regime 1) and the low inflation (Regime 2) regimes. A_0 corresponds to vector of constant terms, u_t is the vector of i.i.d. error terms. c_{t-d} is the threshold variable determining regime of the system, lagged by d periods. In this paper, since we are measuring the role of credit channel under different inflationary environments, the threshold variable c_{t-d} is selected as the year on year inflation rate π_t. γ is the optimal threshold value of the inflation characterizing the regime of the model, i.e. high or low, and it has to be endogenously estimated along with the other parameters. $I[.]$ is the dummy indicator function that equals 1 when $\pi_{t-d} \geq \gamma$, and 0 otherwise.

Before proceeding, we need to test the existence of threshold effect and determine the delay parameter. For this purpose we use *C(d)* statistics based on the estimation of an arranged regression proposed by Tsay (1998)[2]. Under the null hypothesis that Y_t is linear $H_0 : A_0^1 = A_0^2, B_i^1 = B_i^2, C_i^1 = C_i^2$, *C(d)* follows a chi-squared distribution with $k(pk + qv + 1)$ degrees of freedom in which k and v are the number of variables in the Y_t and X_t, p and q represent their respective lag orders. In this study the maximum value of

---

[2] See Tsay (1998) for detailed information on *C(d)* test.

p, q and d is set at 12[3]. Then we estimate an arranged linear VAR model with LS according to the increasing order of threshold variable π_{t-d}. Using different starting points for recursive estimates m_0=50 and m_0=100, and delays d=1,2,3, for the threshold variable, *C(d)* tests are calculated and reported on Table 1. The test statistics corroborates the TVAR by rejecting the null hypothesis of linearity in all delays at least at 5 percent significance level. Threshold test chooses the delay d=1 for the threshold variable π_{t-d}, with the maximum value of the chi-squared test statistic 211.38.

<Insert Table 1 about here>

After determining the delay parameter, the interval including the possible breakpoint of the threshold variable [0.10, 0.25] is partitioned into 300 grids, and the TVAR model is estimated for each grid. The grid including the minimum Akaike Information Criterion (AIC) value is selected as the optimal threshold value of the inflation γ. The minimum values is achieved when inflation rate is 19.3 percent, the corresponding breaking date of inflation is 2003:11 (See Figure 1). The breaking date corresponds to a change in the inflation regime, CBRT has started to implement a stabilization programme based on implicit inflation targeting policy and inflation has successfully reduced into single digit by the end of 2004.

<Insert Figure 1 about here>

After determining the breaking date of the model, we proceed to impulse response and forecast variance decompositions to analyze whether a change in inflationary environment has any impact on the functioning of credit channel[4]. Impulse responses

---

[3] The respective optimum lag length of endogenous and exogenous variables are determined as three and four on the basis of Akaike and Hannan and Quinn Information Criterion.

[4] The model assumes credit is the most endogenous variable. One can argue that output is more endogenous than inflation and that credit is less exogenous due to long-term contracts. To control this we

reported in Figure 2 show the impact of one and two standard deviation shocks to monetary policy variables on output, prices and credits. In order to compare impulse responses under different inflationary environments we scale the responses of each variable in terms of standard deviations (Enders, 2003). It is clear from the figure that responses to monetary variables follow substantially different patterns across the high and the low inflation regimes.

<Insert Figure 2 about here>

As expected, the response of industrial production to monetary variables is found to be negative in both regimes. In the low inflation regime a shock to monetary variables lead to increase in economic activity at first, this is especially the case for M1 shocks, then it started to decline as the period increases. On general, the positive interest rate shocks are found to be more contractionary compared to that of M1 as far as both regimes are considered. This suggests that interbank rate is more effective policy instrument in terms of affecting economic activity.

Responses to negative money shocks initially lead to increase in the prices in both regimes known as price puzzle in the literature (Sims, 1992). The initial positive effect disappears after four months. The responses of prices to interest rate are strikingly different than the results of money shocks, indicating an asymmetric relationship between prices and interest rate in the high and the low inflation regimes. In the high inflation regime prices respond positively to interest rate shocks, whereas the responses turn into negative as economy moves to the low inflation regime.

<Insert Figure 3 about here>

---

employ alternative orderings such as $Y_t' = \left[lcpi_t \, lip_t \;\; lm1_t \;\; intbrate_t \;\; lcre_t \right]$ and $Y_t' = \left[lcpi_t \, lip_t \;\; lcre_t \, lm1_t \;\; intbrate_t \right]$. However we obtain qualitatively the same results.

The results for the responses to negative credit shocks are generally found as expected (see Figure 3). A negative credit shock leads to a temporary decline in economic activity and lowers the prices. In contrast to the other responses, credit tightening turn out to have more impact on economic activity and prices in the low inflation regime. This is especially more evident when the two standard deviation shocks are taken into consideration. The difference between the responses of economic activity and prices under different inflationary environment underline the increasing importance of bank lending channel after the inflation targeting period. However**,** the effects of monetary shocks on credit volume remain very limited especially in the low inflation regime.

Variance Decompositions

Table 2 reports the Variance Decomposition results of the TVAR model. When the inflation falls below the threshold level interbank rate explains a significant portion of change in economic activities with 35.70%, however in the high inflation regime its explanatory power has decreased nearly by half to 18.62%. It has to be pointed out that interbank rate explains more on industrial production than M1 and also credits in both inflation regimes. This also corroborates the evidence obtained from response functions, interbank rate is still more effective policy tool compared to narrow money. Interbank rate still explains a considerable part of variation in the prices, however credits accounts more change than the other variables in the high inflation regime. The contribution of M1 remains low as in the variance decomposition results of industrial production.

<Insert Table 2 about here>

4. Conclusions

In this paper we aim to analyze the role of credit channel in the monetary transmission mechanism under different inflationary environments in Turkey covering the period 1986:1-2009:10. For this purpose we estimate a two-regime nonlinear TVAR model composed of the variables industrial production, M1, interbank rate, prices and total credits and compare the impacts of monetary tightening on economic activity, prices and credit by using impulse response and variance decomposition analysis.

The impacts of monetary variables on total credit volume in the banking system are found to be limited compared to that of prices and industrial production. Although we find that prices respond positively to interbank rate in the high inflation regime, the responses turn into negative as economy moves to the low inflation regime. This suggests that traditional interest rate channel is only the case for the post-inflation targeting period. This variable is also more effective monetary policy tool in terms of its impacts on economic activity in the both regimes. Therefore, the Central Bank of Turkey (CBRT) may able achieve the price stability through interest rate channel in the post-inflation targeting period at the expense of reducing the output.

References

Başçı, E., Ö. Özel and Ç. Sarıkaya (2007) The monetary transmission mechanism in Turkey: new developments, Research and Monetary Policy Department Working Paper No. 07/04, The Central Bank of The Republic of Turkey, Ankara.

Balke, N. (2000) "Credit and Economic Activity: Credit Regimes and Non- linear Propagation of Shocks", Review of Economics and Statistics, 82, 344-349.

Bayoumi, T. and Morsink, J. (2001) A peek inside the black box: The monetary transmission mechanism in Japan, IMF Staff Papers, **48**, 22–57.

Bernanke, B. and Blinder, A. (1988) Credit, money and aggregated demand, *The American Economic Review*, Papers and Proceedings of the One-Hundredth Annual Meeting of the American Economic Association, **78**, 435-439.

Bernanke, B. and Blinder, A. (1992) The Federal funds rate and the channels of monetary transmission, *The American Economic Review*, 82, 901–921.

Bernanke B. and Gertler, M. (1995) Inside the black box: the credit channel of monetary policy transmission, *The Journal of Economic Perspectives*, 9 (4), 27-48.

Christiano, L.J., Eichenbaum, M., and C. Evans (1998) Monetary policy shocks: what have we learned and to what end? NBER working paper 6400.

Çiçek, M. (2005) "Türkiye'de parasal aktarım mekanizması: VAR yaklaşımıyla bir analiz", *İktisat İşletme ve Finans*, 233, 82-105.

Güloğlu, B. and Orhan, S. (2008) The macroeconomic effects of monetary transmission mechanism in Turkey, İktisat İşletme ve Finans, 268, 94-118.

Fuller, W.A. (1976) *Introduction to Statistical Time Series*, New York: John Wiley & Sons, Inc.

Enders, W. (2003) *RATS Programming Manual*. Estima: Evanston, IL.

Krusec, D. (2009) The monetary transmission in the euro area: post-1999 data assessment, *Applied Economics Letters*, 16, 983–988.

Peersman, G. and Smets, F. (2003) The monetary transmission mechanism in the euro area: more evidence from VAR analysis, in *Monetary Policy Transmission in the Euro Area* (Eds) I. Angeloni, A. Kashyap and B. Mojon, Cambridge University Press, Cambridge, pp. 156–89.

Sims, C. (1992) Interpreting the macroeconomic time series facts: the effects of monetary policy, *European Economic Review*, 36, 2–16.

Suzuki, T. (2004) Credit channel of monetary policy in Japan: resolving the supply versus demand puzzle, *Applied Economics*, **36**, 2385-2396.

Tsay, R.S., (1998) Testing and modeling multivariate threshold models, *Journal of the American Statistical Association* 93, 1188–1998.

Zivot, E. and Andrews D. W. K.(1992) Further evidence on the Great Crash, the oil-price shock and the unit root hypothesis. *Journal of Business and Economic Statistics*, 10, 251-270.

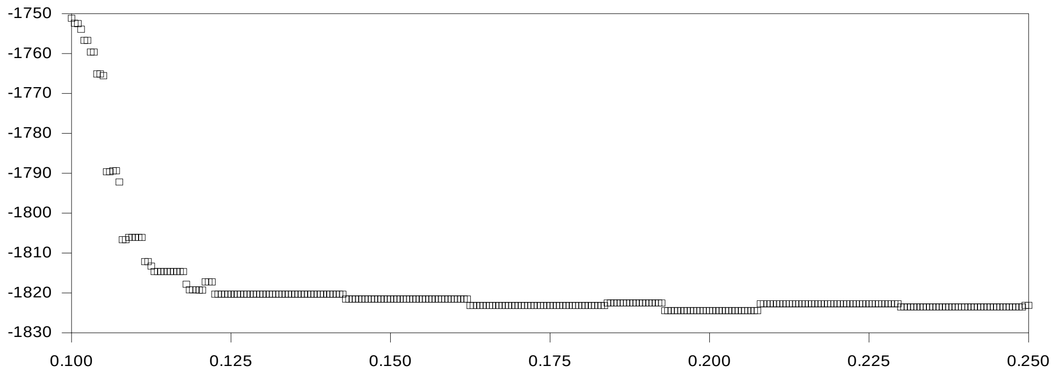

Fig 1. AIC Values for Arranged Regression versus Break Point

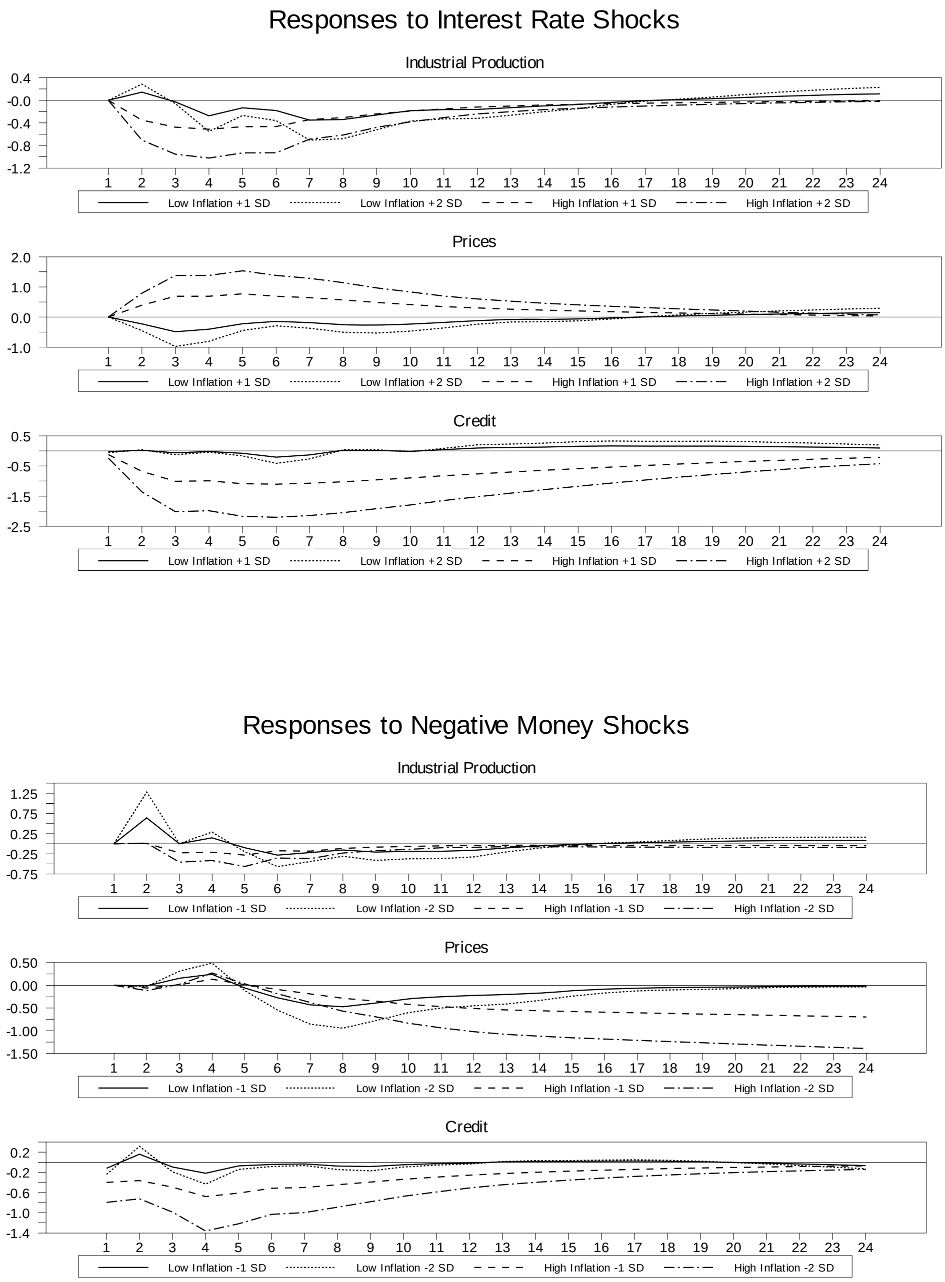

Fig. 2. The effects of monetary tightening under different regimes

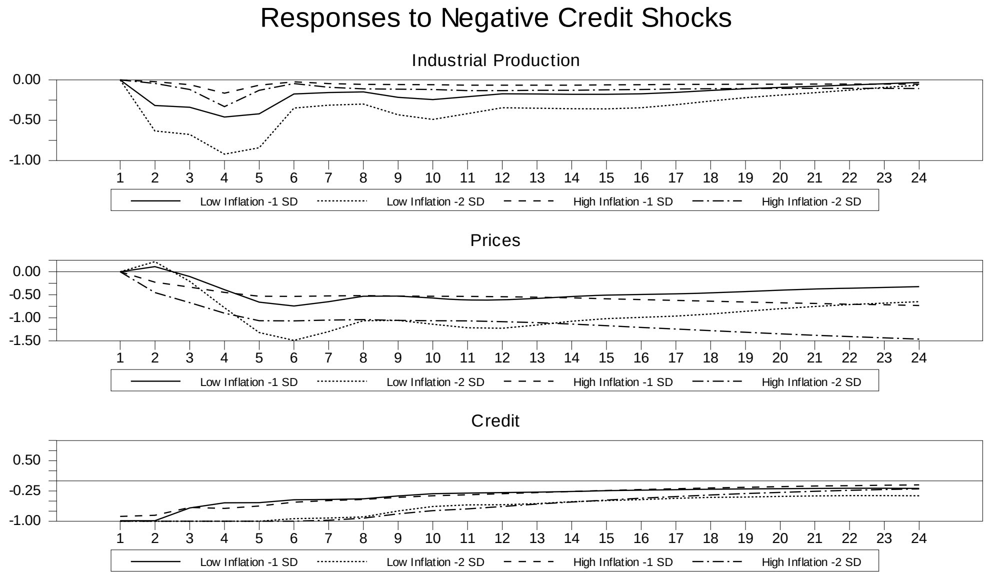

Fig. 3. Responses to credit tightening

Table 1. Threshold Nonlinearity Test

d	m_0	C(d)	P-value
1	50	211.38	0.000
1	100	190.85	0.000
2	50	122.67	0.002
2	100	131.94	0.000
3	50	102.64	0.045
3	100	116.83	0.005

Table 2. Forecast-Error Variance Decompositions

High Inflation Regime						Low Inflation Regime					
Variance Decomposition of LIP						Variance Decomposition of LIP					
Step	LIP	LCPI	LM1	INTBRATE	LCRE	Step	LIP	LCPI	LM1	INTBRATE	LCRE
1	100.000	0.000	0.000	0.000	0.000	1	100.000	0.000	0.000	0.000	0.000
2	92.930	0.387	0.007	6.613	0.064	2	72.280	0.023	25.078	0.585	2.034
3	79.616	0.332	3.518	16.307	0.228	3	72.519	0.674	18.939	0.601	7.266
4	68.326	0.476	5.925	24.893	0.379	4	71.807	0.864	17.337	1.319	8.672
5	61.704	0.580	7.784	29.580	0.352	5	71.598	0.822	16.547	2.660	8.373
6	57.560	0.770	8.749	32.598	0.322	6	70.871	0.798	15.875	4.369	8.086
9	53.013	1.352	9.240	36.032	0.364	9	66.970	0.759	15.082	9.362	7.827
12	51.560	2.130	8.968	36.734	0.608	12	61.958	0.717	14.318	14.957	8.049
15	50.664	2.937	8.749	36.675	0.975	15	58.421	0.780	13.697	19.026	8.075
18	49.935	3.687	8.589	36.402	1.387	18	57.444	1.388	13.131	20.411	7.626
24	48.688	5.052	8.334	35.701	2.224	24	58.912	3.995	11.820	18.627	6.646

High Inflation Regime						Low Inflation Regime					
Variance Decomposition of LCPI						Variance Decomposition of LCPI					
Step	LIP	LCPI	LM1	INTBRATE	LCRE	Step	LIP	LCPI	LM1	INTBRATE	LCRE
1	2.292	97.708	0.000	0.000	0.000	1	0.012	99.988	0.000	0.000	0.000
2	2.655	88.949	0.908	7.135	0.352	2	0.637	95.725	0.733	0.196	2.708
3	1.507	77.159	1.759	19.131	0.445	3	4.270	90.297	1.866	1.202	2.366
4	0.997	68.906	3.829	25.428	0.839	4	6.945	83.839	3.346	1.967	3.903
5	0.802	62.933	4.719	29.885	1.661	5	8.823	76.555	2.826	2.858	8.939
6	0.730	59.794	5.056	31.572	2.848	6	9.223	70.665	2.427	4.912	12.773
9	0.556	57.380	4.513	30.863	6.687	9	7.268	57.660	1.915	13.197	19.960
12	0.432	58.031	3.617	27.542	10.378	12	6.092	49.868	1.507	19.750	22.783
15	0.486	59.189	2.901	23.478	13.946	15	6.964	45.365	1.282	23.267	23.122
18	0.743	60.163	2.373	19.562	17.158	18	9.781	43.327	1.185	23.844	21.862
24	1.621	60.981	1.695	13.530	22.173	24	16.555	43.542	0.966	20.407	18.530

Ordering: LIP, LCPI, LM1, INTBRATE, LCRE

PREVIOUS DISCUSSION PAPERS

32 Catik, A. Nazif and Karaçuka, Mehmet, The Bank Lending Channel in Turkey: Has it Changed after the Low Inflation Regime?, September 2011.
Forthcoming in: Applied Economics Letters.

31 Hauck, Achim, Neyer, Ulrike and Vieten,Thomas, Reestablishing Stability and Avoiding a Credit Crunch: Comparing Different Bad Bank Schemes, August 2011.

30 Suleymanova, Irina and Wey, Christian, Bertrand Competition in Markets with Network Effects and Switching Costs, August 2011.

29 Stühmeier, Torben, Access Regulation with Asymmetric Termination Costs, July 2011.

28 Dewenter, Ralf, Haucap, Justus and Wenzel, Tobias, On File Sharing with Indirect Network Effects Between Concert Ticket Sales and Music Recordings, July 2011.

27 Von Schlippenbach, Vanessa and Wey, Christian, One-Stop Shopping Behavior, Buyer Power, and Upstream Merger Incentives, June 2011.

26 Balsmeier, Benjamin, Buchwald, Achim and Peters, Heiko, Outside Board Memberships of CEOs: Expertise or Entrenchment?, June 2011.

25 Clougherty, Joseph A. and Duso, Tomaso, Using Rival Effects to Identify Synergies and Improve Merger Typologies, June 2011.

24 Heinz, Matthias, Juranek, Steffen and Rau, Holger A., Do Women Behave More Reciprocally than Men? Gender Differences in Real Effort Dictator Games, June 2011.
Forthcoming in: Journal of Economic Behavior and Organization.

23 Sapi, Geza and Suleymanova, Irina, Technology Licensing by Advertising Supported Media Platforms: An Application to Internet Search Engines, June 2011.
Published in: The B. E. Journal of Economic Analysis & Policy 11 (2011), Article 37.

22 Buccirossi, Paolo, Ciari, Lorenzo, Duso, Tomaso, Spagnolo Giancarlo and Vitale, Cristiana, Competition Policy and Productivity Growth: An Empirical Assessment, May 2011.

21 Karaçuka, Mehmet and Catik, A. Nazif, A Spatial Approach to Measure Productivity Spillovers of Foreign Affiliated Firms in Turkish Manufacturing Industries, May 2011.
Forthcoming in: The Journal of Developing Areas.

20 Catik, A. Nazif and Karaçuka, Mehmet, A Comparative Analysis of Alternative Univariate Time Series Models in Forecasting Turkish Inflation, May 2011.
Forthcoming in: Journal of Business Economics and Management.

19 Normann, Hans-Theo and Wallace, Brian, The Impact of the Termination Rule on Cooperation in a Prisoner's Dilemma Experiment, May 2011.
Forthcoming in: International Journal of Game Theory.

18 Baake, Pio and von Schlippenbach, Vanessa, Distortions in Vertical Relations, April 2011.
Published in: Journal of Economics 103 (2011), pp. 149-169.

17 Haucap, Justus and Schwalbe, Ulrich, Economic Principles of State Aid Control, April 2011.

16 Haucap, Justus and Heimeshoff, Ulrich, Consumer Behavior towards On-net/Off-net Price Differentiation, January 2011.
Published in: Telecommunication Policy 35 (2011), pp. 325-332.

15 Duso, Tomaso, Gugler, Klaus, Yurtoglu, Burcin B., How Effective is European Merger Control? January 2011.
Forthcoming in: European Economic Review.

14 Haigner, Stefan D., Jenewein, Stefan, Müller, Hans Christian and Wakolbinger, Florian, The First shall be Last: Serial Position Effects in the Case Contestants evaluate Each Other, December 2010.
Published in: Economics Bulletin 30 (2010), pp. 3170-3176.

13 Suleymanova, Irina and Wey, Christian, On the Role of Consumer Expectations in Markets with Network Effects, November 2010 (first version July 2010).
Forthcoming in: Journal of Economics.

12 Haucap, Justus, Heimeshoff, Ulrich and Karacuka, Mehmet, Competition in the Turkish Mobile Telecommunications Market: Price Elasticities and Network Substitution, November 2010.
Published in: Telecommunications Policy 35 (2011), pp. 202-210.

11 Dewenter, Ralf, Haucap, Justus and Wenzel, Tobias, Semi-Collusion in Media Markets, November 2010.
Published in: International Review of Law and Economics 31 (2011), pp. 92-98.

10 Dewenter, Ralf and Kruse, Jörn, Calling Party Pays or Receiving Party Pays? The Diffusion of Mobile Telephony with Endogenous Regulation, October 2010.
Published in: Information Economics and Policy 23 (2011), pp. 107-117.

09 Hauck, Achim and Neyer, Ulrike, The Euro Area Interbank Market and the Liquidity Management of the Eurosystem in the Financial Crisis, September 2010.

08 Haucap, Justus, Heimeshoff, Ulrich and Luis Manuel Schultz, Legal and Illegal Cartels in Germany between 1958 and 2004, September 2010.
Published in: H. J. Ramser & M. Stadler (eds.), Marktmacht. Wirtschaftswissenschaftliches Seminar Ottobeuren, Volume 39, Mohr Siebeck: Tübingen 2010, pp. 71-94.

07 Herr, Annika, Quality and Welfare in a Mixed Duopoly with Regulated Prices: The Case of a Public and a Private Hospital, September 2010.
Forthcoming in: German Economic Review.

06 Blanco, Mariana, Engelmann, Dirk and Normann, Hans-Theo, A Within-Subject Analysis of Other-Regarding Preferences, September 2010.
Published in: Games and Economic Behavior 72 (2011), pp. 321-338.

05 Normann, Hans-Theo, Vertical Mergers, Foreclosure and Raising Rivals' Costs – Experimental Evidence, September 2010.
Forthcoming in: The Journal of Industrial Economics.

04 Gu, Yiquan and Wenzel, Tobias, Transparency, Price-Dependent Demand and Product Variety, September 2010.
Published in: Economics Letters 110 (2011), pp. 216-219.

03 Wenzel, Tobias, Deregulation of Shopping Hours: The Impact on Independent Retailers and Chain Stores, September 2010.
Published in: Scandinavian Journal of Economics 113 (2011), pp. 145-166.

02 Stühmeier, Torben and Wenzel, Tobias, Getting Beer During Commercials: Adverse Effects of Ad-Avoidance, September 2010.
Published in: Information Economics and Policy 23 (2011), pp. 98-106.

01 Inderst, Roman and Wey, Christian, Countervailing Power and Dynamic Efficiency, September 2010.
Published in: Journal of the European Economic Association 9 (2011), pp. 702-720.

Heinrich-Heine-University of Düsseldorf

Düsseldorf Institute for
Competition Economics (DICE)

Universitätsstraße 1 _ 40225 Düsseldorf
www.dice.uni-duesseldorf.de

ISSN 2190-9938 (online)
ISBN 978-3-86304-031-4