Keele University
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Research Report to the Department for International Development

Research Grant R7968: Macro-financial Policy Effects on Household Behaviour in LDCs

1. Background and Objectives

Many developing countries have been engaged in policies which have attempted to promote development of the financial sector. Such policies have included:

- the removal of interest rate controls, including ceilings on lending rates
- the introduction of new, or liberalisation of existing capital markets
- the introduction of competition in the banking system
- the removal, or reduction in the level of, deposit banks' reserve requirements.

In addition, as part of an overall economic liberalization strategy, there have been other policies such as privatization of state enterprises and services, and reductions in direct and indirect taxation, which have been followed with the objective of creating a market-led growth process in which the financial sector can play in increasingly important role in mobilising savings and channeling credit to producers and consumers.

In the currently dominant literature, the expectation is that the expansion of the financial sector will lead to higher rates of GDP growth by enabling those productive economic agents with high return projects to access commercial credit at market clearing interest rates (see Lawrence, 2003 attached). However, there is another literature which relates to the impact of changes in financial policy on household behaviour. Changes in monetary and fiscal policy can be expected to impact on household behaviour through well established transmission mechanisms (see Lawrence, 2002). In particular, we would expect specific policies to result in an increased availability of credit. Reductions in statutory reserve ratios, increasing bank competition, and increased credit to the private sector should result in increased borrowing by households to fund consumption and/or production activities

The research question addressed by this project is how far do the changes in policy consequent upon adopting the liberalisation agenda, affect household financial behaviour. The original intention of the project was to assess the significance of the financial reforms at the macro-level on the supply of savings and the demand for credit at the level of the household, and in addition to examine the effects of liberalisation on the availability of credit from informal and formal sources, and on the provision of informal forms of social insurance between households. It was intended to achieve these objectives by modelling and testing these macro-micro interactions using household survey data collected over time and matched with data on measurable policy variables over time. The key questions at issue were how far macro-financial policy changes affect household savings, credit and insurance decisions in the way in which the two main strands of theory predict.

In collaboration with our Indian colleagues, we acquired all the available rounds of the consumer expenditure part of the National Sample Surveys, and the Debt and Investment survey which was part of the 48th round of 1992-3. We were therefore able to acquire the household level data from these surveys starting with Round 38 (1983-4) followed by Rounds 43 and 45-56. However, we were not able to acquire the decennial Debt and Investment survey which was part of Round 37: this was not available either on CD-Rom or on tape. The next decennial Debt and Investment Survey (Round 57: 2002-3) is not yet available. This has meant that we have had not had the possibility of making a comparison of savings and borrowing behaviour observed directly over a ten year period coterminous with the financial sector reforms.

As a consequence, we have analysed consumption patterns over the series of surveys we do have and tried to relate these to changes in financial policy over the period of financial reform. To do this we have assumed that changes in financial behaviour will act on consumer decisions through the credit channel. Greater credit availability will show up in a higher consumption of durable consumer goods in particular, but also in other expenditures where credit is often required, such as education and health.

Methods

The NSSO's consumer expenditure rounds were chosen because they are extensive, rich in data and allow for comparison over time. The rounds were undertaken annually until the 1980s when there were two quinquennial rounds (38 and 43). After round 43, the consumer expenditure surveys resumed with round 45 and have continued annually since. These big 'quinquennial' rounds are very large (at least 115,000 households) and are interspersed with 'thin' rounds which still cover a large number of households (at least 14,000 households).

Because the ASCII data files are organised in most of the rounds in levels, we decided to engage a computer programmer to write a program which would allow more\ easy manipulation of the data using the STATA statistical package. This procedure occupied a large part of the time of programmer and research assistant during the course of the project. This was partly because of problems with the data files which in several cases turned out to be corrupted, but also because of problems with the organisation of the raw data files. However, organising the files in this way has meant that they are now much more easy to analyse over time, which was the main object of the exercise.

The NSSO consumer expenditure rounds have been the subject of considerable debate since their inception. There has been particular concern with the appropriateness of the reporting periods in accurately reflecting household expenditure. Indeed during the period for which we have the data, there has been experimentation with reporting periods within the same round (NSSO, 2001; Deaton, 2003)). Understanding the structure of the sample and its relation to reporting periods was a major problem in being able to compare data across rounds. Ironing out these and other similar problems concerning sample structure and changes in questionnaires, to construct a unique dataset enabling greater facility in analysing changes in household behaviour over time, has been a major achievement of this project. Most work using NSS data has compared no more than two rounds and more often than not has analysed individual rounds in particular Indian states rather than over India as a whole. We believe this project the first to compare rounds over a substantial period of time.

We simultaneously constructed another, macro-level dataset for India which contains specific policy events, but also the usual indices of financial development which have been combined into one index (see Lawrence and Longjam, 2003). We also have included in this dataset measures of interest rate spread to proxy for bank competition and the density of bank branches. This is annual data and we have tried to match as closely as we can the dates of the NSSO rounds, which are sometimes mid-year to mid-year and sometimes calendar year, with the years of the macro-level data, which are always mid-year to mid year.. In any event the effects of policy would be expected to be lagged and data is collected over six months to a year, so that precise matching may not so crucial.

Given that there is very little financial information in the consumer expenditure schedules, and what there is not available for each round, we decided to attack the research question from a different angle to that originally intended. We therefore set out to estimate conditional demand systems for each cross section of a set of repeated surveys which span a period of significant financial policy changes

The final step is to see if there is any relationship between the changes in the characteristics of the demand system and macro-financial policies as measured by financial depth indicators described below.[1]

Findings

We first start with the macro-level. It becomes clear that although financial liberalisation starts effectively in 1991, three of the financial development measures which should show increases over the decade actually do so. However, none of these are directly acting on the credit channel to households. The final indicator does show a decline in net bank credit to government as a proportion of GDP, but not to the extent that might be expected given the liberalisation measures. Table 1 shows some standard financial development indicators and how they progressed through the 1990s.

Table 1: India: Indicators of Financial Depth

Year	Interest rate spread	Lending Rate	Deposit Money vs. Central Bank Assets	Liquid Liabilities to GDP	Private Credit by Deposit Money Banks and Other Financial Institutions to GDP	Stock market capitalization to GDP	Net Bank Credit to Government, to GDP	Index of Financial Development[2]
1990-1	7	0.16	0.68	0.43	0.26	0.12	0.25	162
1991-2	7	0.19	0.68	0.43	0.24	0.17	0.24	192
1992-3	6	0.17	0.72	0.45	0.25	0.23	0.24	233
1993-4	4	0.14	0.72	0.45	0.24	0.32	0.24	286
1994-5	4	0.15	0.78	0.45	0.24	0.37	0.22	320
1995-6	4.5	0.165	0.78	0.45	0.23	0.38	0.22	328
1996-7	4	0.15	0.78	0.45	0.23	0.35	0.21	307
1997-8	3.5	0.14	0.80	0.32	0.24	0.33	0.23	287
1998-9	2.5	0.125	0.80	0.34	0.24	0.27	0.22	251
1999-00	3.25	0.123	0.83	0.36	0.26	0.41	0.23	342

What Table 1 suggests is that even though there has been increased bank competition and various measures have been taken to develop the financial sector, the results, in terms of the accepted measures of financial development, are mixed. While we can observe substantial progress in the deposit money to central bank assets ratio, and in

[1] See the Methodology report appended to this report for full details .
[2] See Lawrence and Longjam (2003) for an explanation of this index.

stock market capitalisation (albeit from a small base), the liquid liabilities ratio has if anything moved in the opposite direction and the ratio of credit to the private sector has stagnated, rather than increased, as might be expected. Conversely credit to the government has remained stable as a proportion of GDP, suggesting that private sector lending opportunities have proved more risky than buying treasury bills. There has been considerable discussion inside and outside India about the gradual character of the Indian reform process and while this has been praised by for example, Stiglitz (2002), others, especially inside India have been critical of the slow pace of progress (Ahluwalia, 2002).

At the household level, the results of the various analyses we have made are appended to this report with a commentary on their interpretation. The results on the determinants of share of expenditure show a remarkable consistency across rounds in terms of size, sign and significance of the coefficients. This is despite the widely held view that comparing quinquennial and 'thin' rounds is not comparing like with like, and that the rounds for which there were changes in sample methodology cannot be compared with earlier rounds (see Deaton, 2003).

Table 2: Mean Conditioning Elasticities for the demand of cereals with respect to medical and educational expenditure (cecmed) and w.r.t. durables expenditure (cecdur)

round	cecmed	cecdur
43	-0.240	-0.000
45	-0.252	-0.008
46	-0.208	-0.005
47	-0.149	-0.005
48	-0.219	-0.005
49	-0.164	-0.003
50	-0.226	-0.011
51	-0.262	-0.012
52	-0.149	-0.013
53	-0.240	-0.012
54	-0.411	-0.013

There is less consistency in the estimation of demand elasticities with respect to medical and educational expenditure and durables expenditure, yet greater consistency in the mean elasticities (see Annex 2). The key set of data of interest here are the conditioning elasticity means reproduced in Table 2. These measure the sensitivity of the demand for cereals with respect to the, possibly non-optimal, allocation to medical and educational expenditure, on the one hand, and durable expenditure on the other hand. Our methodological approach, as described in Annex 1, attempts to trace the effect of significant changes of the financial system on individual behaviour through variations of these parameters, and in particular their association with variables that measure the degree of change of the financial system. Although, we observe some variation over time in each of these series, we can extract the following facts. First, the expenditure on education and medical services has a fairly constant effect on the demand for cereals. This is to be expected since it is unlikely that over such a short horizon the provision for these services will have been affected by changes in the financial system. Second, the demand for cereals (an essential part of the diet of most households) is seen to become, over time, more sensitive to the expenditure on durables, although in absolute terms the elasticity is small. This suggests that although changes in the financial sector may have had some effects on household's allocation of durables relative to the consumption of basic food these effects are small and economically (so far) insignificant.

The final set of results appended to this report suggest that there may be some relationship between changes in these elasticities and changes in financial indicators. In particular we note that:

- There is a strong negative association between the magnitude of demand elasticity for cereals conditioned on medical and educational expenditure and the liquid liabilities ratio: one explanation for this could be that an increase in financial depth allows for less substitution between cereals and medical expenditure; however, none of the other financial development indicators showed any significant association with the cereals conditional elasticity.

- There is a strong association between the magnitude of elasticity of the demand for cereals conditioned on durables, and several financial development indicators: deposit money to central bank assets, credit to the private sector (negative), stock market capitalisation, the interest rate spread, the lending rate and the index of financial development. These results suggest that there is an association between some financial policies which increase financial depth and the extent to which durables expenditure can be made without affecting basic food consumption.

However, in both sets of results, it must be observed that if we are observing changes consequent upon financial liberalisation, while they can be associated with such liberalisation policies, the changes in behaviour are very small.

However, there is still more work to be done:

- With the appearance of Round 59 (All-India Debt and Investment Survey), which ended in December 2003, we should be able to compare household financial behaviour directly over the ten year period encompassing the reforms. It will be interesting to see whether this behaviour matches the indirectly observed behaviour of households in consumption.

- Now that we have succeeded in modelling the Indian data, we need to do the same with the Living Standards Measurement Survey datasets we have for other countries, something we have not been able to do until we had successfully run the model on the Indian data.
- In the case of Ghana and Vietnam, we should be able to make direct comparisons of behaviour over a period of financial reform, with the Indian Debt and Investment surveys of rounds 48 and 57.

The second of these activities was originally intended to be done within the timescale of the project, and can now follow once the analysis of the Indian datasets is complete.

Dissemination

Three working papers have been produced in the Keele Economic Research Papers series. Two are background papers reviewing the literature and state of research in household financial behaviour and the relationship between financial development and growth, while the third surveys the financial reforms in India and constructs a financial development index. A fourth paper is in progress detailing the methodology and results of the analysis of the Indian data. Further papers on comparative analysis and individual country analysis of the other datasets are envisaged within the next 12 months. One paper on India will have to be published in the NSSO journal *Sarvekshana* as a condition of using the data. One paper will be submitted to the widely read Indian journal *Economic and Political Weekly*.

Presentation of results at conferences and seminars in the UK and India is planned, including a meeting of the ESRC's Finance and Development Seminar and the annual Development Studies Association Conference. Discussion of findings is also planned with World Bank researchers working in the fields of finance and household analysis.

List of Publications

Lawrence, P. (2002) 'Household credit and saving: does policy matter?' *Keele Economics Research Papers* 2002/04, Keele University Economics Department.

Lawrence, P (2003) 'Fifty Years of Finance and Development: Does Causation Matter?' *Keele Economics Research Papers* 2002/07, Keele University Economics Department.

Lawrence, P. (2003) and I Longjam, 'Financial Liberalisation in India: measuring progress', *Keele Economics Research Papers* 2002/08, Keele University Economics Department.

Lawrence P and G Lanot (2004), Financial development and household behaviour: evidence from Indian consumer expenditure surveys (forthcoming)

References

Ahluwalia, M.S.(2002), 'Economic Reforms in India Since 1991: Has Gradualism Worked?', *Journal of Economic Perspectives*, 16,3: 67-88

Deaton, A (2003), Adjusted Indian Poverty Estimates for 1999-2000, *Economic and Political Weekly,* January 25th : 322-326

National Sample Survey Organisation (NSSO) Expert Group on Non-Sampling Errors (2001), 'Methodological Study: Results of a Pilot Survey on Suitability of Different Periods for Measuring Household Consumption (January-June 2000)', *Sarvekshana* October 2000-March 2001: 89-145.

Stiglitz J.E. (2000), 'Capital Market Liberalisation, Economic Growth and Instability', *World Development*, 28, 6: 1075-1086

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