A new measure of Divisia money

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This paper describes the changes to the Bank of England's method of calculating its series for Divisia money—a measure of the money supply that weights money according to its usefulness in transactions. These changes, introduced in this publication (January 2005), do not alter the purpose of the series, but implement a number of improvements to the method of calculation to bring the Bank's series closer to the true underlying concept that it measures. Further analysis of the reasons for the changes, and their impact on Divisia money, will be published in the Bank's Quarterly Bulletin *on 14 March.*

Background

The Bank has published a quarterly measure of Divisia money since 1993[1]. The Bank publishes the aggregate measure as an index together with its growth rates, a sectoral breakdown of the aggregate into household sector, private non-financial corporations' (PNFCs') and other financial corporations' (OFCs') Divisia, and a sectoral breakdown of the change in and amount outstanding of, and interest rates on, each component. The purpose of Divisia money is to weight the component assets of M4 according to the transactions services they provide. Following a consultation process between July and September 2004, a number of changes have been introduced. These changes aim to bring the Bank's measure of Divisia as close as possible to this unobservable concept, by making the Divisia series more theoretically appealing, and by making its calculation more accurate. The changes have been applied, where possible, to the back data, which go back to 1977.

Responses to the consultation were generally positive. Specifically, following a request by users, the Bank will continue to publish the component parts of the old Divisia series[2]. However, there is a break in November 2004 in the quoted interest rates series used in the old measure, due to the impact of new regulations concerning the rates that banks can advertise. This reinforces the benefit of the switch to using effective rates explained below.

Divisia money is a weighted average of the growth rates of N different component money holdings. The components are weighted according to their usefulness for making transactions, which is proxied by the user cost of holding these components. The weights are two-period moving averages. The user cost is measured by the difference between the interest rate paid on component balances and a benchmark rate, which should in turn be the rate paid on balances with no transactions value. Divisia (D) is therefore calculated as follows:

$$\frac{D_t - D_{t-1}}{D_{t-1}} = \sum_{i=1}^{N} \frac{1}{2}(W_{i,t} + W_{i,t-1})\frac{\Delta M_{i,t}}{M_{i,t-1}}$$

where M_i is the amount outstanding of the ith money holding, ΔM_i is the corresponding change, and W_i is the weight on the ith component:

$$W_{i,t} = \frac{M_{i,t}(r_{B,t} - r_{i,t})}{\sum_{i=1}^{N} M_{i,t}(r_{B,t} - r_{i,t})}$$

where r_B is the rate on the benchmark asset and r_i is the rate on the ith asset. In practice, r_B can vary over groups of assets, for example between the household sector and corporates.

This basic formula has not been changed. The changes improve the calculation of each of M_i, r_B, and r_i. Table 1 summarises the changes, which are explained in the next section.

Table 1

Variable	Previous Method	New Method
M_i	Break-adjusted	Non break-adjusted
ΔM_i	Break-adjusted	Break-adjusted (no change)
r_B	Quoted rates, arbitrary adjustment	Effective rates, envelope approach
r_i	Quoted rates	Effective rates

Changes

The following changes have been introduced:

First, **the benchmark rate (r_B) is now calculated using an envelope approach**, such that the highest rate among the component assets of M4 at each point in time serves as the benchmark rate. The optimal benchmark rate is a rate paid on balances with no transactions value, but with similar credit quality to other M4 assets (so the same usefulness as a store of value). In the past, the benchmark rate was based on the rate on local government bills.

For household sector Divisia, TESSA and ISA accounts constitute assets similar to the optimal benchmark asset described above. TESSAs and ISAs have therefore been included separately in an envelope of all components of M4, such that the component asset bearing the highest rate (and therefore by assumption the least use for transactions) always becomes the benchmark. The rate on local government bills is included in the envelope until TESSAs were introduced in 1991. Since then, the rate on

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[1] For more details see 'Divisia measures of Money', Fisher, Hudson and Pradhan (1993), *Bank of England Quarterly Bulletin,* May, and 'The demand for Divisia Money', Janssen (1996), *Bank of England Quarterly Bulletin,* November.

[2] These are published on the Bank's Statistical Interactive Database (www.bankofengland.co.uk/mfsd/iadb/), with the exception of the interest rate on local government bills, which was published for the last time in the December 2004 edition of this publication, as local government bills are no longer in issuance and are no longer eligible for use as collateral in operations with the Bank of England. The rate on three-month Treasury bills can in practice be used as a good proxy.

TESSAs and, since the introduction of ISAs in 1999, the rate on ISAs has always been at the top of the envelope.

Corporates cannot access some of the rates available to the household sector. There is no M4 asset for the corporate sector that represents a store of value but provides little use in transactions. However, using an envelope comprising the components of M4—i.e. excluding local government bills—makes the determination of the benchmark more theoretically appealing, and ensures that the same method is used for household sector and corporate Divisia. Chart A shows the impact of this change on household sector Divisia.

Chart A

Annual growth in household sector Divisia: effect of envelope approach
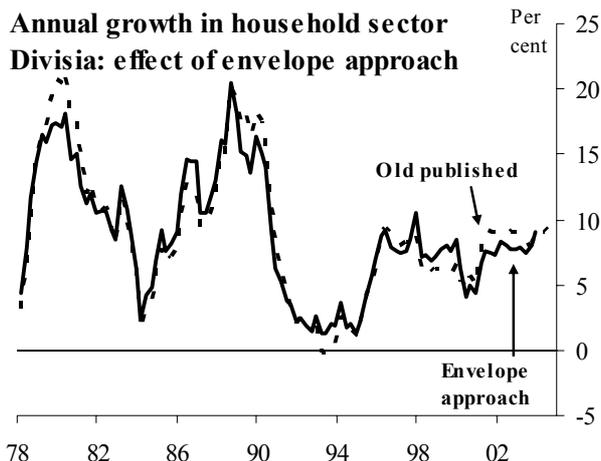
Second, **effective interest rates rather than quoted rates are now used from 1999**. Effective rate data, which measure the ratio of interest paid to balances outstanding on groups of deposits, are theoretically more satisfactory than quoted rates, as they represent the interest paid on balances, rather than the rate offered to a new investor. Data on effective rates are available back to the start of 1999.

This change introduces two small difficulties. First, as there are no effective rates data for corporate building society deposits, these have been proxied with the rate on corporate bank time deposits. Corporate building society deposits are small, so this should have little impact. Second, this change leads to a small break in the Divisia indices in 1999. However, breaks also exist in the quoted rate series, when banks changed their practices for quoting rates. As effective rates are both theoretically and practically more satisfactory than quoted rates, we have nevertheless judged that this change is worth making.

Third, **the level of aggregation has changed slightly**. TESSA and ISA accounts are included as separate components of M4, and the household sector's building society instant access accounts are separated from accounts that require a period of notice. This brings the treatment of building society accounts into line with that of bank accounts. The new Divisia series includes the following components of money holdings:

- Household sector bank time deposits excluding TESSAs and ISAs
- PNFC & OFC bank time deposits
- Household sector, PNFC & OFC bank sight deposits
- Household sector building society instant access deposits excluding ISAs

- Household sector building society notice deposits excluding TESSAs
- PNFC & OFC building society deposits
- Household sector, PNFC & OFC bank non interest-bearing deposits
- Household sector, PNFC & OFC notes & coin
- Household sector TESSA and ISA deposits

Fourth, **the new calculation uses non break-adjusted changes data.** The old series were calculated using break-adjusted changes and amounts outstanding: M_i was break-adjusted. In the new Divisia series, break-adjusted changes (ΔM_i) continue to be used, as a break in the series should not be reflected in the component growth rates. However, there is not such a good argument for using break-adjusted levels (M_i). As Divisia aims to measure the liquid balances in an economy, using non break-adjusted levels categorises balances according to the interest that they were earning at the time. Break-adjustment of levels recategorises past balances into a new component category. For instance, when a building society becomes a bank, all previous deposits in that institution are reclassified. Doing so in the Divisia analysis would therefore change the interest rate they had been assigned.

Fifth, **monthly series are additionally published for data since 1999**. Until now, the Bank has published four Divisia money series on a quarterly basis.

Finally, **a further series for aggregate Divisia excluding OFCs has been added,** equivalent to household sector and PNFC Divisia. OFC Divisia data have a high variance. Financial corporations' choices of where to place deposits—for example to place a wholesale deposit with a bank or another OFC—are largely driven by processes that contain little information from a macroeconomic point of view in anything but the long run.

Chart B shows the net impact of all changes discussed above on household sector Divisia. The most significant changes to the data are in the 1980s (upward in the first half and downward in the second half of that decade), while the more recent data are broadly unchanged.

Chart B

Annual growth in household sector Divisia