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Abstract

The paper presents a new classification of monetary policy frameworks which it applies to 'advanced' and 'emerging' economies for the period since the end of the Bretton Woods international monetary system. The classification is multi-dimensional, in particular while the main focus is on the monetary authorities' objectives and account is taken of both pre-announced targets and actual performance, it also emphasises the development of the underlying monetary and financial infrastructure which conditions the instruments available to the monetary authorities and therefore the coherence of different policy frameworks. It is based in large part on information obtained from a close reading of the monetary policy elements of IMF Article IV consultations. The two major changes which can be seen in the data are the swing over time in these countries towards a heavier focus on inflation, and the trend towards more systematic and coherent monetary arrangements which are typically associated with lower inflation and better, or at least not lower, economic growth. The classification, which will eventually be extended to cover developing countries as well, should enable researchers in the future to address a number of questions about comparative economic performance in a more nuanced way than has so far been possible.

Keywords: monetary policy framework, monetary targeting, exchange rate targeting, inflation targeting

JEL codes: E42, E52, F33

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This paper represents the first outcome of a wider research project on the evolution of countries' monetary policy frameworks since the demise of the Bretton Woods international monetary system. A monetary policy 'framework' is used here to refer to the objectives and the context that condition monetary policy decisions: primarily the objectives pursued by the monetary authorities,¹ but also the set of constraints and conventions within which their monetary policy decisions are taken. Section 1 explains why and how such a classification can make a useful and fruitful contribution to research. Section 2 discusses the key principles which should underlie a comprehensive classification, and then explains the precise criteria involved in distinguishing between the different frameworks identified. Section 3 discusses the implementation of these principles and criteria with illustrations of individual countries. Section 4 reports the results of the classification for 27 'advanced' countries/currency areas and 33 'emerging' economies, and provides the overall findings by subperiod on the basis of two different possible aggregations of the frameworks. Section 5 reports the results of a simple unconditional analysis of the inflation and growth performance associated with the different frameworks. Section 6 concludes. The basic classification data, together with the 'Individual country details' which explain the classification for each country in each period, are now available on the www.monetaryframeworks.org website.

1 Rationale

There is a substantial existing literature (see Tavlas, Dellas and Stockman, 2008, for a survey) on the classification of exchange rate regimes, which was stimulated by (among other contributions) Calvo and Reinhart's (2002) finding that many countries which claimed to have floating exchange rates were in fact intervening directly in the forex market and/or

¹ The term 'monetary authorities' refers to the combination of government plus central bank where the latter is not independent, and to the central bank where it is.

manipulating their interest rates in order to stabilise their exchange rates. This implied that there could be substantial differences between de jure ('announced', that is, declared by member countries to the IMF) and de facto (actual, realised) exchange rate regimes, and led to the construction of new, de facto, classifications of these regimes. The two most substantial and well-known such classifications are those by Levy Yeyati and Sturzenegger (2005), who used statistical data to classify exchange rate regimes by individual years, and Reinhart and Rogoff (2004), who used both announcements and realised data, typically for longer periods than one year.² The IMF, which used to publish purely de jure classifications, began to publish an annual de facto classification in 1998, and this was made more consistent and comprehensive with the revisions introduced by Habermeier et al. (2009).

For monetary regimes, on the other hand, the classification and de jure/de facto issues have attracted little attention. There is a small literature on whether the Bundesbank in the mid-1970s to late 1990s was really targeting money as it claimed, or targeting inflation (Bernanke and Mihov, 1997). But researchers have mostly relied on monetary authorities' announcements, e.g. of monetary or inflation targets,³ and there are no comprehensive de facto classifications of monetary regimes.⁴ Roger (2010), for example, presents graphs showing the evolution of monetary regimes between 1989 and 2006 (see also Schmidt-Hebbel, 2010). However, the Eurozone and the US (which do not or did not until recently have precise formal targets for inflation) are also sometimes referred to as 'informal inflation targeters', albeit not always on a clear basis, and some researchers have included the Eurozone countries in their category of inflation targeters (e.g. Cecchetti, King and Yetman, 2011).

² Ghosh, Gulde and Wolf (2002) provide a judicious defence of the de jure classification, and also use a 'consensus' classification which omits cases where de facto and de jure classifications yield different results.

³ Under IMF rules countries have to declare their exchange rate regimes, and that is the source of the de jure classification, but there is no corresponding obligation to declare the monetary policy framework.

⁴ Cobham (2015) provides a statistics-based analysis of the de facto objectives of monetary policy for advanced countries, but this is not the same as monetary policy regimes or frameworks.

Even in the absence of the de jure/de facto issue, however, there is a need to bring together the exchange rate and (other) monetary policy elements in a single comprehensive evaluation of monetary frameworks, because of the obvious relations between them. Inflation targeting typically (and, arguably, necessarily) involves floating exchange rates while hard exchange rate pegs largely preclude the active use of interest rate or money policies, though intermediate exchange rate flexibility can coexist with some monetary autonomy (however, see also Frankel, Schmukler and Serven, 2004, and Rey, 2015).

Reinhart and Rogoff (2004) implicitly acknowledge the importance of non-exchange rate monetary elements when they distinguish 'freely floating' exchange rate regimes with well-organised monetary policies, such as those of the US, Australia and Japan, from 'freely falling' regimes with poorly disciplined monetary policies resulting in high inflation (40% or more is their criterion) and inevitable depreciation, such as Argentina in the 1980s. Bailliu, Lafrance and Perrault (2003) address the issue by supplementing their exchange rate classification, for countries with intermediate or floating regimes, by information on other nominal anchors for monetary policy. In recent years (for example, 2014) the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions* identifies whether countries have an exchange rate anchor, a monetary target, an inflation targeting framework or some other monetary policy framework, against their (de facto) exchange rate arrangement. The 'other' category here includes the US and the Eurozone countries, which suggests that this part of the classification is more de jure than de facto; it is also relatively 'coarse' in its (monetary policy) categories.

The aim of this research is to construct and apply a methodology to classify countries' monetary policy frameworks over the period since the end of the Bretton Woods international monetary

arrangements in the early 1970s (the 1950s and 1960s are less interesting because in nearly all countries policy was dominated by fixed exchange rate parities, and there were few, if any, instances of anything that could be called monetary or inflation targets in the modern senses). The classification will take into account both pre-announced targets for exchange rates, monetary aggregates and inflation, and the realised values of these and other indicators. In other words, the project will bring together exchange rate and (other) monetary elements in a single comprehensive classification of monetary policy frameworks, which draws on *de jure* (pre-announced targets) as well as *de facto* (realised data) inputs.

The classification will facilitate a more precise account of the development of monetary policy strategies than is currently available. It should also be of significant value to researchers investigating the large number of questions where there is a need for a clear identification of the monetary frameworks used by different countries at different times. Several examples may be given. First, attempts to assess the reasons why some countries experienced deeper and/or longer recessions as a result of the 2007-8 financial crisis (e.g. Ólafsson and Pétursson, 2011; Cecchetti, King and Yetman, 2011) have included dummy variables for inflation targeting and for hard peg exchange rate regimes; such work would benefit from a more precise and nuanced classification of monetary frameworks. A second example is the research by Frappa and Mésonnier (2011) which investigated whether asset price volatility was higher under inflation targeting. A third example is work on the impact of exchange rate regimes on international trade in gravity models, where it would be useful to investigate the effects on trade of monetary policy frameworks overall rather than just currency unions (as in Rose, 2000) or even a wider menu of exchange rate regimes (as in Adam and Cobham, 2007); this might, for example, shed additional light on the Calvo and Mishkin (2003) argument for policymakers to focus on financial, fiscal and monetary institutions rather than just exchange rate regimes. A fourth

example is work on the determinants of countries' choices of exchange rate regimes, e.g. Juhn and Mauro (2002), Levy Yeyati, Sturzenegger and Reggio (2010), where the research question can be opened out into the choice of monetary policy framework, rather than just exchange rate regime, and a precise classification of frameworks is essential.

There will also be scope for further work on economic performance under different monetary policy frameworks. A particular example here is the issue of the suitability of inflation targeting for emerging market economies. While in some academic policymaking circles there has developed a presumption that inflation targeting is the best possible arrangement and one to which all countries should aspire, some doubts have been cast on this presumption by authors including Ball (2010) who examines the econometric evidence on the effectiveness of inflation targeting, Cobham (2011) who discusses the costs of the financial institutions infrastructure required, and Boughzala and Cobham (2011) who emphasise exchange rate and other asset price issues; see also Frankel (2010). One explanation for Ball's finding that IT seems to have benefits for emerging economies (whereas its benefits for advanced economies are minimal) may be that comparisons between IT and non-IT advanced countries are comparing well-organised and disciplined monetary policy frameworks on both sides, whereas comparisons between IT and non-IT emerging economies may be in effect comparing well-organised and disciplined monetary policy frameworks for IT countries with sometimes less well-organised and disciplined frameworks on the other side; this point may also have some relevance for advanced countries in the 1970s and 1980s. An improved classification of monetary frameworks would facilitate like for like comparisons and in general would help to distinguish more clearly the advantages (and disadvantages) of inflation targeting relative to other modern, well-organised, monetary frameworks.

2 Key principles and their application

Monetary policy frameworks can be thought of as combinations of the objectives of the monetary authorities (including their understanding of the trade-offs between those objectives) and the set of constraints and conventions – the former more binding, the latter more matters of established usage – within which specific (conjunctural) monetary policy decisions are made. The constraints and conventions which are relevant here include the rules or disciplines to which the authorities are subject (voluntarily or involuntarily), the nature of the financial and monetary markets and institutions in existence, the understandings (on the parts of the monetary authorities and of the society) of key macroeconomic relationships, and the political environment within which the monetary authorities operate. While some frameworks completely or almost completely dictate the actions of the monetary authorities, e.g. currency boards, others such as inflation targeting allow varying scope for (constrained) discretion, while others allow even wider discretion. In any case, any given framework can be operated more or less well or badly, that is, with more or less competence and commitment on the part of the monetary authorities. Here the aim is to define a set of monetary policy frameworks which recognises the crucial differences – in frameworks, not in specific decisions – across countries and time periods but still allows comparisons to be made between broadly similar cases. Factors such as the degree of capital account openness, the degree of central bank independence, the use by the monetary authorities of credit targets within a 'reserve money programme' or a country's participation in an IMF-monitored stabilisation package are treated as important elements of the context, but the focus for the classification is the objectives of the monetary authorities and the extent to which they are attained.

Classification is about collecting some cases in one category and other cases in other categories, so what is important is the distinctions between the various categories. In this connection there are six major distinctions which are appropriate for countries with relatively modern, or developed, financial and monetary systems:

- do the monetary authorities (central bank and/or ministry of finance) publish targets for some (intermediate or final) objective, or do they exercise short-term discretion over what objectives they pursue and how?
- where such targets exist, are they for monetary aggregates, exchange rates, inflation or, indeed, some other variable?
- where such targets exist, are they precise and narrow or wide and broad-brush?
- are such targets static or stationary (the same each year) or are they ‘converging’, e.g. involving an exchange rate crawl or a declining trend from high to low monetary growth or inflation?
- are these targets fulfilled, or not?
- if policy is not focused on one (or more) specified and quantified objectives, is the policy framework well defined and clearly structured, that is, do the authorities have both a clear view of what they want and the means to achieve their various objectives?

In addition, for countries with less developed financial and monetary systems, particularly in earlier periods, two additional distinctions are required. First, it is useful to identify an exchange rate *fix*, where the exchange rate is fixed entirely by central bank action in interactions which the central bank dominates,⁵ as opposed to an exchange rate *target*, where there is an autonomous foreign exchange market not dominated by the central bank, where intervention

⁵ For example, the central bank acts as one side of every transaction, using rates which it sets itself, typically with very narrow spreads; or the central bank allows banks to undertake transactions but only at narrow spreads which it sets itself..

in that market is only one of the tools used, and where a more or less active monetary policy is focused on controlling the exchange rate. Within the fix category a 'pure' exchange rate fix, where no monetary policy instruments are deployed, can be distinguished from an 'augmented' exchange rate fix where some basic instruments are used (but typically directed towards objectives other than exchange rate stabilisation, in a context of limited capital mobility).

It is necessary to identify separately the case where multiple direct controls are employed, including multiple exchange rates, direct controls on bank lending and/or administered interest rates, with no sense of monetary policy objectives and with the financial system essentially geared to the provision of finance for investments determined in a state plan. This is the monetary policy framework associated with command economies.

The approach developed here therefore starts (like the exchange rate regime classification of Reinhart and Rogoff, 2004) by asking if there is a pre-announced target for monetary policy. Here targets which do not drive monetary policy, either because they represent government aspirations which are not internalised by the monetary authorities, or because they are merely internal projections on the part of the authorities with no element of pre-commitment or preannouncement, are excluded.⁶ Next, the approach asks what variable is being targeted: exchange rate (where it differentiates as above between fixes and targets) or monetary aggregate or inflation;⁷ how precise that target is; and whether it is stationary or converging. The next stage is to examine whether the target is fulfilled, or not: a framework which includes an identified target must be observed in practice as well as announced. In addition, the approach

⁶ Moreover, the focus is on targets that drive monetary policy as a whole rather than, for example, exchange rate arrangements which are disconnected from overall monetary policy and sustained, typically, by exchange controls (rather than monetary instruments).

⁷ There is no evidence so far of systematic preannounced targeting of any other variable such as nominal income.

allows for combinations of (specific) objectives, distinguishing between situations where one or the other of two objectives is dominant and where they are equally weighted.

Where no target is announced so that the extent to which the (presumably multiple but unquantified) objectives are met cannot be assessed, or where the announced target is clearly not attained, the analysis considers (as far as it can) the clarity of the objectives of the monetary authorities, including their perceptions of the trade-offs between them, and then turns to the effectiveness of the instruments available: do the monetary authorities in some particular case have the ability to pursue serious targets? The classification therefore identifies cases of multiple direct controls as above and then distinguishes between three types of discretion: 'unstructured', 'loosely structured' and 'well structured', where the triage between these three focuses on both the monetary policy objectives of the monetary authorities and their instruments. 'Well structured' indicates that the monetary authorities have both a coherent set of objectives, in the sense that they have a clear view of their preferences, on the one hand, and of the trade-offs between them, on the other, and a precise and effective set of instruments. 'Unstructured' discretion indicates both that the priorities of the monetary authorities and the trade-offs between objectives as perceived by them are not clear and that the instruments available to them are largely ineffective (that is, not capable of delivering the desired outcome). Between these two categories there is what can be called 'loosely structured' discretion, covering cases where the instruments are effective but the objectives and trade-offs are unclear; or where the objectives and trade-offs are clear but the instruments are ineffective; or (more often) where both criteria are partly but only partly fulfilled. This last category covers a range of different monetary arrangements, and partly for this reason is very common; but there seems to be no clear principle that would make it possible to disaggregate it further.

Finally the exercise identifies the case where a country uses another sovereign's currency (dollarisation or euroization); the case where a country has chosen to join a currency union and therefore has no national monetary policy framework of its own (so the empirical classification focuses instead on the framework of the union-level central bank); and two separate categories for currency boards. In both of the latter the domestic currency must typically be backed 100% by foreign exchange held by the domestic currency issuer,⁸ but it is useful to differentiate between the 'pure' case where a currency board operates within a very limited financial system and the 'augmented' case where there is a more developed financial and monetary system and some monetary instruments can be deployed.⁹

[Table 1 near here]

Table 1 sets out the complete list of categories identified. In implementing the classification, however, some further criteria and/or definitions are needed, and those that will be used here are as follows. First, 'full' targeting requires that 'narrow' stationary announced targets are 'typically attained'. To be 'narrow', targets need to be point targets or, for exchange rates, parities with margins of no more than 2.25% on either side (those are the margins set at the Smithsonian agreement at the end of the Bretton Woods period, or the narrow margins originally used within the European Monetary System); for monetary aggregates, ranges of no more than 3% (which includes, for example, most German and French monetary targets but not all UK or US ones); and for inflation, ranges of no more than 2% (the most common range for inflation targeters, see Hammond, 2012). To be 'typically attained', the outcome for a monetary aggregate or inflation should be within the target range over the period specified or

⁸ See Wolf et al (2008) p49, including note 7.

⁹ This distinction corresponds broadly to that made by Wolf et al (2008, chapter 2) between early and modern currency boards, where the former were essentially aimed at facilitating trade for existing underdeveloped monetary systems, typically in a colonial context, while the latter were more concerned with establishing monetary policy credibility in more complex monetary and financial environments under political independence.

no more than 1% below or above the range or, where there is a point target only, within 2% on either side of that target; slightly wider outcomes could be accepted for much higher targets (e.g. monetary targets above 10%); for exchange rate targets, the actual rate should remain within the margins specified. In addition, within a run of years in which targets are mostly attained, a single year deviation is ignored or a longer deviation is ignored where it is clear that expectations remain anchored.¹⁰ The point of these relatively generous criteria is to identify the monetary policy frameworks as they are understood and as they influence both policy decisions and expectations: small occasional deviations do not compromise the perceived existence of frameworks, while large and repeated deviations do.

‘Loose’ targeting, on the other hand, requires either that narrow targets are missed by no more than 1% beyond the limits defined above, or that wider targets – e.g. target ranges for monetary aggregates of 4% – are hit according to those criteria. ‘Wider’ targets have wider ranges than narrow targets or are less clearly specified, where less clearly specified targets include, for example, definitions of price stability goals rather than inflation targets, or even cases where no precise targets are specified. In the latter case, where the monetary authorities are consistently pursuing some unannounced and unquantified target, that pursuit is likely to be identified in the sources used (see below) and its attainment can be checked, but the lack of announcement rules out ‘full’ targeting.

Converging targets are ones which change (in most cases, decline) regularly over time, as opposed to, for example, stationary inflation targets which are constant over time. Finally, in the mixed target categories ‘dominant’ is decided on the basis of which of two targets of

¹⁰ In practice this refers only to inflation targeting in the later part of the period, where for some countries and years at least it is possible to get consistent evidence on expectations.

different kinds are more fully met, and ‘primacy unclear’ refers to cases where both are attained to an equal extent. The (rare) combinations of three objectives – exchange rate, monetary aggregate and inflation – are also considered together in a single category, whichever is dominant.

[Table 2 near here]

Table 2 collects these criteria and definitions together for convenience, and they should be sufficient to distinguish between all the various cases of exchange rate, monetary and inflation targeting (categories 7-22 and 26-31 in Table 1). However, there are a number of pairs of categories for which it is useful to indicate more clearly the basis on which they will be distinguished from each other in the implementation of the classification:

- pure or augmented exchange rate fix versus (any form of) exchange rate targeting: the key difference is that in the fixes more or less all transactions involve the central bank as one of the counterparties or are transacted at rates which the central bank sets, and there is no separate or autonomous foreign exchange market where banks or other agents freely transact with each other; whereas in exchange rate targeting there is an autonomous foreign exchange market in which other agents operate and the central bank intervenes more or less frequently; the margins in fix cases are typically much narrower (e.g. 0.5% or less) than those in targeted markets
- pure versus augmented exchange rate fix: in both cases the central bank fixes the exchange rate via its actions within a market which it dominates, but in PERF it deploys no other monetary policy instruments whereas in AERF it uses from time to time some basic instruments such as reserve requirements, typically aimed at other objectives

- pure or augmented exchange rate fix versus pure or augmented currency board: the key difference is that in the currency board all domestic currency is backed by the central bank's holdings of foreign currency; this is therefore a more tightly regulated arrangement
- augmented exchange rate fix versus unstructured discretion: under the former some basic monetary instruments are deployed, typically aimed at objectives other than the exchange rate itself, but nevertheless the exchange rate is the central concern of policy; under the latter the exchange rate may still be subject to a (probably varying) fix but the authorities have more concern with other objectives as well (typically economic activity or growth and inflation) and use a wider range of instruments
- pure versus augmented currency board: the difference lies in the extent to which other monetary policy instruments are deployed: none in the first case but a few – typically including reserve requirements but also standing facilities and some limited possibility of lender of last resort operations – in the second¹¹
- multiple direct controls versus unstructured discretion: the former corresponds to a command economy, where the financial system is merely the counterpart of the planning process, whereas in unstructured discretion there is some kind of an autonomous banking system which is at least partly independent of any state planning mechanism
- unstructured discretion versus loosely structured discretion: in the former the monetary policy instruments are weak, and actual as well as potential fiscal dominance is common, while the monetary authorities do not have a clear idea of the priorities they should be following or of the trade-offs between their various objectives; in the latter case the instruments are weak but the objectives are clear and coherent, or the instruments are effective but the objectives are unclear and incoherent, or the instruments are partly effective and the objectives partly clear and coherent; in loosely structured but not in

¹¹ See, for example, the differences highlighted in Wolf et al (2008, Tables A1.5-6).

unstructured discretion there would typically be a money market and some sort of government securities market so that monetary policy is operated at least in part through indirect instruments; in the former case fiscal dominance is the norm, whereas in the latter case it is typically possible but not always realised

- loosely structured discretion versus mixed targets (monetary, exchange rate and/or inflation): in the former case the objectives are unclear or at least unquantified, but in the latter they are quantified (and met)
- loosely structured discretion versus well structured discretion: under well structured discretion the authorities have a complete set of effective indirect policy instruments (which requires a full set of money and securities markets and the absence of fiscal dominance), a clear ranking of their own objectives and a full understanding of the trade-offs between those objectives

[Table 3 near here]

These distinctions are summarised in Table 3. In total there are 32 different categories in this classification. It would, of course, be possible to construct an even finer grid of frameworks, but the danger is that the classification ends up identifying every country episode separately, and no useful comparisons can be made. On the other hand, 32 categories is obviously too large for many purposes, notably for econometric work. However, the classification has been constructed in part with an eye to aggregation, and there are at least two useful aggregations which can be made. First, the categories can be aggregated by target variable – exchange rate (but keeping the distinction between fix and target), money, inflation, mixed targets and different types of discretion.¹² Second, they can be aggregated by the state of development of

¹² The three types of discretion typically involve such different specifications of objectives – undefined and incoherent for UD, clearer but often unstable (switching over time) for LSD, and clear, coherent and stable for WSD – that it is not useful to aggregate them together.

the monetary policy framework, where development is conceived as a progression from less precise to more precise monetary control but there is no presumption that the benefits of this progression necessarily outweigh the costs and no presumption that the 'highest' category necessarily represents the final end-point of the progression. In this case the aggregation goes from 'basic' – e.g. pure exchange rate fix – through 'intermediate' – which can be usefully split to differentiate between 'unstructured' and 'loose' frameworks – to 'developed' – e.g. full targeting of different kinds, or well structured discretion. These aggregations are made precise in Table 4.

[Table 4 near here]

3 Implementation and examples

While recent inflation targets are easily located from central banks' websites, it is often more difficult to find the details of monetary and even exchange rate targets for earlier decades. However, there is a source which can be tapped for this: the IMF Article IV consultation reports, including both Staff Reports (SR) and Recent Economic Developments (RED) papers (and their successors in later years¹³), which are now available in the IMF's electronic archives. This material is essentially real time (such consultations are held every one or two years) so that the evolution of policy frameworks can be traced as it happened and as it was seen at the time. The reports typically provide information on the aims and objectives of the monetary authorities, so that any serious and consistent pursuit of an informal (unannounced) target can be identified.¹⁴ They also provide information on the outcome for target variables, which is particularly important for monetary aggregates and some inflation targets where the targets are set for national definitions not covered in standard statistical sources such as the IMF's

¹³ In the 1990s and onwards the RED papers are replaced by a variety of Selected Issues or Background Papers, while the SRs tend to include more purely descriptive material.

¹⁴ That is, targets which are de facto but not de jure can be identified.

International Financial Statistics (IFS).¹⁵ The classification process involves the examination of (parts of) 50 or so documents per country for the 41 years covered.

In principle there is a question about the independence and objectivity of these IMF reports: it could be, for example, that the IMF staff typically push the same standard policies from the same standard perspective on all countries so that the reports provide a distorted view of the issues and developments concerned.¹⁶ However, the internal evidence is that the IMF has supported different monetary policies in different countries at different times, and the reports – which are negotiated and agreed with the authorities in the relevant countries – often set out the points on which IMF staff and national authorities agree and disagree.¹⁷ There is also a contrast between the monetary policy and the fiscal policy content of these reports: on the latter the IMF staff do indeed seem to recommend on nearly every occasion the same medicine – cuts in public spending and in the budget deficit – in a way that validates the old joke (that IMF stands for It's Mainly Fiscal). The explanation for this difference may be that on monetary questions the IMF staff are discussing largely technical issues with central bankers who have at least some technical expertise, whereas on fiscal matters they are discussing unavoidably politicised budgetary issues with politicians who (IMF staff believe) have political axes to grind, and the IMF has a legitimate concern about fiscal dominance and the effect of deficits on monetary growth.

¹⁵ In the 1970s, in particular, a number of countries pegged their currencies to particular baskets, the weights for which (if and when they are disclosed) are also not easily available elsewhere.

¹⁶ This is likely to be less of a problem for advanced than for emerging and developing countries.

¹⁷ For example, the IMF staff showed no inhibitions in the 2000s about urging the Federal Reserve to introduce a formal inflation target, or about pressing the European Central Bank to clarify its monetary pillar, and those authorities showed no inhibitions in defending their chosen policies. Many emerging countries have also sometimes resisted IMF pressure for more interest rate or exchange rate flexibility.

This material can also be supplemented with, and checked against, overviews of the development of monetary frameworks from central bank and other sources. Later perspectives sometimes provide clearer views about long run developments, as well as revised data on targeting outcomes.¹⁸

The definition of 'advanced' and, even more, of 'emerging' economies is not clear-cut, with the latter often depending on the investment opportunities identified by investment banks. Here, for want of a better principle, the groupings of advanced and emerging countries used in Laurens et al. (2009) are used throughout; these are different, for example, from the classification in the IMF's *International Financial Statistics*, which appears to treat all members of the Euro area as advanced economies (but not, for example, Poland). On this basis the paper covers 26 advanced countries plus the Euro currency area, and 33 emerging economies.¹⁹

Before reporting the overall results some individual country illustrations will be useful. The following tables and others corresponding to each of the 60 countries are now available on the www.monetaryframeworks.org website. Each table has at the bottom a selection of the most relevant IMF references and, in some cases, additional sources used, so that in principle the reader can find the rationale for the classifications.

¹⁸ Houben (2000) is particularly useful as a source on European countries pre-1999; it includes revised data on target outcomes which were checked with the relevant central banks.

¹⁹ Laurens et al. (2009) identify 24 advanced economies; included here are also Hong Kong and Luxembourg, which do not appear anywhere in their list. They also identify 31 emerging economies; included here are also Cyprus and Malta, which also do not appear in their list.

First, Australia provides an example of a country which tries a variety of frameworks – exchange rate fix, monetary targets and ad hoc discretion – before eventually homing in on inflation targeting, initially informal and then formal:

Australia

Years	Targets and attainment	Classification
1974-76	currency fixed to USD then to basket, central bank sets middle rate with very narrow margins permitted; monetary policy instruments include interest rates, direct and indirect controls on bank lending and special reserve deposit ratio; efforts to increase non-monetary financing of budget deficits	augmented exchange rate fix AERF
1977-83	exchange rate devalued November 1976, then exchange rate adjusted little and often, until large devaluation March 1983; monetary 'projections' or 'expected growth', first given in March 1976, not regarded as targets, but met or nearly met 5 years out of 7; main monetary policy instrument now is OMOs	loose monetary targeting LMT
1984-92	exchange rate floated and most exchange controls abolished late 1983; wider financial reform helps move towards indirect monetary instruments; monetary target well overshot 1984 and not renewed; ad hoc policy and 'checklist' approach, with gradual shift towards more emphasis on inflation	loosely structured discretion LSD
1993-96	informal inflation targets for underlying inflation over unclear period, targets met	loose inflation targeting LIT
1997-2014	formal inflation targets (now endorsed by government, with central bank independent), initially for underlying inflation but from 1998 for headline CPI, on average, over the cycle; inflation target numbers exceeded between mid-2000 and mid-2001 and inflation expectations rise, but actual and expected inflation rapidly revert and formal target refers to cycle; smaller and shorter-lived rise in actual and expected inflation mid-2008; inflation target numbers met in other years	full inflation targeting FIT

Selected IMF references: RED 1978 pp48-9, 64; SR 1978 pp8, 9; RED 1979 pp24, 30; RED 1981 pp35-7; RED 1983 pp52-6, 69-70; RED 1986 pp51-5, 57-8, 68; RED 1991 pp36-7, 38; SR 1995 p16; RED 1996 pp22-3; RED 1997 pp22-3; SR 2000 pp8-9; SR 2001 pp14-16, 28-8; SR 2002 pp6-7; SR 2003 pp5, 8, 27; SR 2008, pp5, 13.

Additional sources: Grenville (1997); MacFarlane (1997).

Second, Germany pursued monetary targets for most of the pre-EMU period (as an intermediate means to controlling inflation), but it also intervened in the foreign exchange

market from time to time, to an extent that varied with both EMS and wider international developments:

Germany

Years	Targets and attainment	Classification
1974	aim of restricting growth of central bank money but no announced target; forex interventions within Snake	loosely structured discretion LSD
1975-85	monetary targets mostly met, forex intervention mainly vs USD but sometimes vs European currencies within Snake, then from 1979 within EMS; monetary control mainly via OMOs and rediscount facilities	monetary with exchange rate targeting MwERT
1986-87	monetary targets overshot, interest rates and heavy forex intervention used to limit appreciation	exchange rate with monetary targeting ERwMT
1988-91	monetary targets attained; German Economic, Monetary and Social Union May 1990	MwERT
1992-93	monetary target overshot 1992, barely attained 1993; heavy intervention in ERM upheavals	ERwMT
1994-8	monetary targets attained 4 years out of 5, in hardening EMS	MwERT
1999-2014	membership of European Monetary Union	currency union CU

Selected IMF references: RED 1975 pp31 -3, 43; RED 1982 pp31-2, 42-4, 56; RED 1985 pp31-4, 55-8; RED 1988 pp13-16, 35-6; EDSBI 1994 pp16-18.

Additional sources: Houben (2000, especially pp 196-7, 308-9); Beyer et al (2009); Gros and Thygesen (1998, especially pp169-70).

Third, Israel provides an example of a country which progressed from a very poorly functioning framework (and hyperinflation) in the 1980s by way of a crawling exchange rate to inflation targeting (with formal central bank independence coming particularly late in the process):

Israel

Years	Targets and attainment	Classification
1974-85	unsuccessful attempts to stabilise currency (versus USD then basket then USD), then from 1977 float with recurring depreciations; high monetary growth and no formal targets, widespread indexation, recurring fiscal dominance, ending in hyperinflation in 1984-5	unstructured discretion UD
1986-91	serious stabilisation efforts from July 1985 (including currency reform and 'no printing' law) but continuing devaluations versus basket of major currencies	loosely structured discretion LSD
1992-94	preannounced exchange rate crawl intended to be consistent with informal inflation target; monetary operations increasingly focused on discount rate	exchange rate with inflation targeting ERwIT

1995-96	exchange rate bands widened, informal inflation targets met	inflation with exchange rate targeting IwERT
1997-2003	exchange rate bands widening continuously, declining narrow formal inflation targets undershot 3 years and overshot 1 year out of 7	loose converging inflation targeting LCIT
2004-14	static inflation targets met 9 years and nearly met 2 years out of 11; exchange rate bands, already so wide they were not relevant, scrapped 2005; some changes to inflation targeting procedures; significant forex purchases to limit appreciation 2008-11; central bank finally made independent from 2010 after long delays	full inflation targeting FIT

Selected IMF references: SR 1977 p10; RED 1984 p44; RED 1985 p56; RED 1987 pp58-60, 81, 105; SR 1987 pp9-10; RED 1989 p49; SR 1991 pp11-12; RED 1993 pp16-18, 39; SR 1996 pp10-12; SR 1998 pp21-4; SISA 1999 pp20-22; SISA 2000 pp57-8; SR 2000 pp22-5; SR 2001 pp16-17; SI 2005 chI; SR 2008 p8; SR 2010 pp18, 23, 27; SIP 2012 chIII; SR 2014 p9.

Additional source: Barkai and Liviatan (2007); Bank of Israel (2007).

Fourth, Argentina developed from multiple direct controls in the mid-1970s through unstructured discretion (and recurring hyperinflation) in the 1980s to the use of an augmented currency board in the 1990s; the collapse of the currency board in 2001 was followed by a short period of policy incoherence, succeeded by a period in which instruments were at least partly effective and objectives at least partly coherent:

Argentina

Years	Targets and attainment	Classification
1974-6	multiple exchange rates, direct controls on bank lending, bank deposits nationalised (from 1973)	multiple direct controls MDC
1977-90	bank deposits denationalised, central bank gets more autonomy, interest rates still controlled, some liberalisation of forex market; repeated unsuccessful attempts at exchange rate-based stabilisation, each ending with overvaluation; alternation of multiple and unified exchange rates; recurring fiscal dominance; monetary control weak with poor instruments poorly wielded, real interest rates repeatedly negative; central bank remains important source of credit to private as well as public sector; some parallel financial markets	unstructured discretion UD
1991-2001	currency board with some monetary policy ('convertibility plan'): central bank can vary reserve requirements and has some small scope to buy government securities and to lend to private sector, also limited role as lender of last resort	augmented currency board ACB

2002	exit from currency board late 2001 in conditions of forex and banking crisis and government debt default, followed by period of political and economic policy incoherence, in terms of both instruments and objectives; emergency measures of various kinds	unstructured discretion UD
2003-14	some initial economic and financial stabilisation with bank and debt restructuring, economic recovery from late 2002; but from about mid-2000s gradual but accelerating recourse to direct controls of various kinds (including from 2012 import controls), and fiscal dominance (central bank independence weakened 2012); very wide but ineffective monetary targets; exchange rate heavily managed	loosely structured discretion LSD

Selected IMF references: RED 1974 p31; RED 1977 p25, 40-1, 50-2; RED 1984 p34-5; RED 1990 Appendix IV; BP 1992, pp1-11; RED 1993 pp17-19; SI 2002 chII; SR 2005 pp20-1; SI 2006 pp4-9; SR 2006 pp16-18; *Argentina Economic Developments 2013/2014/2015* (all published February 2016; no regular consultations between 2006 and 2016).

Additional reference: Wolf et al. (2008, esp. ch8).

Finally, Turkey had a long period of incoherent policy, with some improvements mainly in instruments in the 1990s, then moved to inflation targets from 2002 but struggled to meet those targets on a consistent basis and in some periods its framework has to be reclassified as loosely structured discretion:

Turkey

Years	Targets and attainment	Classification
1974-88	exchange rate adjusted frequently (more fixed than targeted); monetary policy operated mainly through direct instruments; strong element of fiscal dominance; 1986-88 monetary targets repeatedly missed; lack of clarity over objectives, with repeated returns to expansion before inflation fully controlled	unstructured discretion UD
1989-2002	exchange rate more market-determined; central bank now operating more through indirect instruments; but objectives less than coherent, recurring fiscal dominance; first inflation target 2002 well undershot	loosely structured discretion LSD
2003-5	wide informal/implicit inflation targets (+/-2% band) hit	loose inflation targeting LIT
2006-8	wide formal inflation targets overshot, no evidence of expectations remaining anchored	loosely structured discretion LSD
2009-13	wide inflation targets met except for 2011, when expectations remain partly within band	loose inflation targeting LIT
2014	wide inflation target well overshot, and expectations well above band	loosely structured discretion LSD

Selected IMF references: RED 1985 section III.1; RED 1990 pp1-2, 22-23, 31; SR 2004 pp4, 26, 40; SR 2013 pp11-12; SI 2014 pp11-18; SR 2014 pp16-19.

4 Findings

We can now consider the overall results of the classification. Figure 1 shows the percentage of countries using each of the 32 frameworks by year, from 1974 to 2014. The most obvious trends are that full exchange rate targeting became more important over time but then declined, and loose exchange rate targeting was initially important but declined, while full inflation targeting grew strongly from the early 1990s and loose inflation targeting was also significant in the last decade or so. Table 5.1 shows the number and percentage of countries using each framework by subperiods, where 1974-84 can be thought of as the pre-Great Moderation subperiod, the Great Moderation itself is divided into pre-EMU (1985-98) and EMU (1999-2007) subperiods, and the final subperiod is the Global Financial Crisis (GFC) and its aftermath (2008-14). The rise over time of full and also loose inflation targeting is clear, as is the varying importance of full and loose exchange rate targeting, and the relatively low frequency of (any type of) monetary targeting. In the discretion category, unstructured declines rapidly in the 1980s and 1990s, loosely structured rises and falls but remains important, and well structured is always infrequent. The sharp rise in membership of currency unions in 1999 and the frequency before 1999 of combinations of exchange rate with monetary or inflation targeting (mostly in countries which were moving towards EMU), can also be seen.

[Figures 1-3 and Tables 5.1-3 near here]

Tables 5.2 and 5.3, and Figures 2 and 3, separate out the advanced from the emerging economies. While the general trends are broadly comparable, in the former group the prevalence and the rise of inflation targeting are stronger, with a shift from LIT to FIT in the final subperiod, and there is a large move towards participation in the EMU currency union (in which case there is no separately identifiable monetary policy framework for the individual members); those three frameworks, LIT, FIT and CU, constitute almost 90% of the frameworks

in the final subperiod. In the emerging group, on the other hand, inflation targeting is consistently less, and exchange rate targeting more, frequent than for the advanced economies, but the same shift from the latter to the former is evident (but later); UD almost disappears but LSD declines but remains important in the final subperiod.

Figures 4-6 and Tables 6.1-3 provide alternative perspectives based on the aggregation of frameworks by target variable (as set out in Table 4). They again make clear the very high degree to which (the broad category of) inflation targeting comes to dominate the frameworks of the advanced economies by the end of the period, to the detriment of both discretion and exchange rate targeting. This is particularly clear from Figure 4 if account is taken of the fact that the framework for EMU is one of loose inflation targeting (given the European Central Bank's definition of price stability rather than inflation target), but still obvious in Figure 5 where participation in currency unions is excluded (it is also excluded from Tables 6.1-3).²⁰ For the emerging economies, there is a later and less strong rise in inflation targeting at the expense of loosely structured discretion and exchange rate targeting, while direct controls and exchange rate fixes disappear in the second half of the period. In addition, for both country groups there is a decline over time in the frequency of the discretion frameworks and a clear switch in the type of discretion from UD to LSD, with this switch taking place earlier and more strongly among the advanced economies.

[Figures 4-6 and Tables 6.1-3 near here]

Figures 7 and 8 and Tables 7.1-3 provide comparable results (excluding CUs) for the aggregation by stage of development. For the advanced economies they show the

²⁰ Exercises of this sort in effect weight individual countries or currency areas equally, so that the 11 EMU members in Figure 5 before EMU are replaced by the one currency area from 1999.

disappearance of 'intermediate 1' and the shrinking of 'intermediate 2' categories, in favour of 'developed' frameworks (full targeting and well structured discretion). For the emerging economies, which have a small but significant amount of 'basic' frameworks (multiple direct controls) to start with, 'intermediate 1' frameworks more or less disappear sometime after the middle of the period but 'intermediate 2' remain at about 60% of the sample, whereas for the advanced economies they are down to about 40%; on the other hand, in the final subperiod developed frameworks are found in about 60% of the advanced and about 40% of the emerging economies.

Table 8 offers a different perspective on the evolution of the frameworks. It identifies the number of episodes (defined as one country having a given framework for one or more years) and the average duration of those episodes for each framework. The final three columns show the incidence of the frameworks in the start- and end-years and in 1998, just before the major change to EMU. It is clear that the frameworks which have the most episodes and relatively long durations are ACB and CU, followed by FERT and FIT, then LSD, then various loose targeting frameworks. Many of the mixed target cases have few episodes and low durations, but this is less true for monetary-exchange rate mixes. On the other hand, full and loose monetary targeting have relatively few episodes and less than average durations (the average duration for all (non-zero) frameworks is 7.8 years).

The main trends highlighted by this classification are the evolution of monetary policy frameworks over time first towards inflation targeting of one sort or another, and secondly towards better structured and disciplined frameworks using more precise indirect rather than less precise direct instruments. While more work needs to be done on the determinants of countries' choices, in broad terms these trends should probably be seen as the result of (i)

increasing clarity on the part of monetary authorities (and also governments and societies) with respect to the feasible objectives of monetary policy, reflecting both experience and the changes in understanding of basic macroeconomic relationships; and (ii) the development of financial infrastructure (especially government securities and interbank money markets), itself sometimes the result of deliberate government policy designed to enable better monetary control but sometimes more incidental. In addition the movement towards monetary union in Europe has had a major impact on monetary policy frameworks, both in the efforts made by countries to qualify for EMU (in particular, the pursuit of hard exchange rate targets by smaller countries or mixed targets by larger ones for that purpose) and in the resulting replacement of individual national frameworks by the (loose inflation targeting) framework of the Euro area. Of the other frameworks discussed, successful monetary targeting of different kinds has been much less frequent in advanced economies and absent in emerging, while exchange rate targeting of different kinds remains important for emerging economies (and probably even more so for the developing economies not classified here). Loosely structured discretion has been common, and continues to be so for emerging economies: this should be understood as involving different mixes of objective clarity and instrument effectiveness, with these elements varying considerably over time in individual countries. Well structured discretion, on the other hand, is rare: it seems that when countries' monetary authorities are really clear about their objectives and in possession of fully effective instruments they tend to opt for specified inflation targets.

5 Economic performance

Tables 9.1-2 report the results of a simple unconditional analysis of the inflation and growth performance associated (contemporaneously) with each of the different aggregations of frameworks. The total row at the bottom makes clear how inflation has been brought, and

maintained, under control in the advanced economies since the 1970s, and in the emerging economies from a higher starting point in the second subperiod, and that economic growth has been much lower since the GFC in 2008.

For the advanced economies, in terms of the target variable aggregation the lowest inflation rates are for exchange rate targets and LSD in the third subperiod and mixed targets in the fourth, but these involve only two or three countries each and are dominated by the disinflationary experiences of Hong Kong and Japan in the third and Switzerland in the fourth subperiod. Apart from these, the striking result here is that inflation is lowest under inflation targeting in every subperiod, while economic growth under inflation targeting is average or above average in all cases. The table also shows that performance under the 'developed' frameworks is mostly superior to that under intermediate 2 frameworks. For the emerging economies the most striking result is that inflation and growth performance under LSD is much superior to that under UD, while performance under inflation targeting is sometimes but not always better than that under exchange rate targeting, and performance under developed frameworks is better than under intermediate 2 frameworks for all except the first subperiod (when the incidence of developed cases is very low).

[Tables 9.1-2 near here]

This unconditional analysis does not take account of other factors affecting inflation and growth: for example, some of the frameworks with higher growth in Tables 9.1-2 are ones that occur mainly in emerging countries which perhaps naturally have higher (catch-up) growth rates. Clearly what is needed is a more detailed (conditional) analysis which takes account of other factors that influence countries' economic performance.

6 Conclusions

This paper represents the first part of a wider research project on monetary policy frameworks which will eventually encompass developing economies as well. It is innovative in its sources and in its categories, which permit not just a finer but a multi-dimensional perspective on the range of frameworks which countries have used in different periods. It will therefore allow researchers to address more carefully a number of questions about the comparative performance of different frameworks, and about the choice of frameworks made by different countries in different periods.

The following work is already planned or under way: conditional analysis of the association between different monetary policy frameworks and inflation, on the one hand, and growth on the other; investigating the effect of weighting the analysis by GDP or population (which provides, among other things, the obvious solution to the difficulty of dealing with the creation of EMU); revisiting Ball's (2010) analysis of the effects of the transition to IT on inflation and other variables, for a wider range of transitions; and using the classification in attempting to identify the determinants of countries' choices of framework.

In the meantime the paper has shown how monetary policy frameworks in both advanced and emerging economies have shifted over time towards heavier emphasis on inflation targeting (with less focus on exchange rates and much less on monetary aggregates) and more precise and systematic ('full' rather than 'loose') monetary strategies. Both these trends, but particularly the latter, appear to be associated with improvements in economic performance, and future work can hope to tease out their relative importance.

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Table 1: The categories of the classification

	full name	acronym	definition
1	Multiple direct controls	MDC	multiple exchange rates and/or controls on direct lending, interest rates, etc
2	Pure exchange rate fix	PERF	exchange rate fixed purely by intervention, no monetary instruments in use
3	Augmented exchange rate fix	AERF	exchange rate fixed by intervention, some basic monetary instruments in use
4	Pure currency board	PCB	domestic currency 100% backed by foreign currency, no monetary instruments in use
5	Augmented currency board	ACB	domestic currency 100% backed by foreign currency, basic monetary instruments in use
6	Unstructured discretion	UD	ineffective set of instruments <i>and</i> incoherent mix of objectives
7	Loose exchange rate targeting	LERT	narrow stationary targets not well hit or wider targets attained
8	Loose converging exchange rate targeting	LCERT	converging narrow targets not well hit or wider targets attained
9	Loose monetary targeting	LMT	narrow stationary targets not well hit or wider targets attained
10	Loose converging monetary targeting	LCMT	converging narrow targets not well hit or wider targets attained
11	Loose inflation targeting	LIT	narrow stationary targets not well hit or wider targets attained
12	Loose converging inflation targeting	LCIT	converging narrow targets not well hit or wider targets attained
13	Monetary with exchange rate targeting	MwERT	monetary targets and exchange rate fixes or targets, monetary dominant
14	Exchange rate with monetary targeting	ERwMT	monetary targets and exchange rate fixes or targets, exchange rate dominant
15	Monetary plus exchange rate targeting	M&ERT	monetary targets and exchange rate fixes or targets, primacy unclear
16	Monetary with inflation targeting	MwIT	monetary and inflation targets, monetary dominant
17	Inflation with monetary targeting	IwMT	monetary and inflation targets, inflation dominant
18	Monetary plus inflation targeting	M&IT	monetary and inflation targets, primacy unclear
19	Inflation with exchange rate targeting	IwERT	inflation targets and exchange rate (fixes or) targets, inflation dominant
20	Exchange rate with inflation targeting	ERwIT	inflation targets and exchange rate (fixes or) targets, exchange rate dominant
21	Inflation plus exchange rate targeting	I&ERT	inflation targets and exchange rate (fixes or) targets, primacy unclear
22	Exchange rate, monetary, inflation targeting	ER&M&IT	three full targets (or fixes), whichever dominant
23	Loosely structured discretion	LSD	instruments not effective <i>or</i> objectives not coherent <i>or</i> both only partly so
24	Use of another sovereign's currency	UASC	dollarisation or euroization
25	Currency union membership	CU	currency union
26	Full exchange rate targeting	FERT	narrow announced stationary targets typically attained
27	Full converging exchange rate targeting	FCERT	narrow announced converging targets typically attained
28	Full monetary targeting	FMT	narrow announced stationary targets typically attained
29	Full converging monetary targeting	FCMT	narrow announced converging targets typically attained
30	Full inflation targeting	FIT	narrow announced stationary targets typically attained
31	Full converging inflation targeting	FCIT	narrow announced converging targets typically attained
32	Well structured discretion	WSD	full and effective set of monetary instruments and coherent set of objectives

Table 2: Criteria and definitions

criteria	definition
full targeting	narrow stationary targets typically attained
narrow target	for exchange rates, margins of +/- 2.25% or less; for monetary aggregates, point targets or target ranges of 3% or less; for inflation, point targets or target ranges of 2% or less
stationary	targets which do not change from year to year
typically attained	outcomes within 1% of target range or within 2% of point target; one larger divergence from target per 3 years overlooked (or more if expectations remain anchored)
loose	narrow targets missed but by no more than 1% more than criteria for full targeting; or wider targets attained on those criteria
wider	for exchange rates, margins wider than 2.25% but less than 10%; for monetary aggregates, target ranges > 3% but less than 6%; for inflation, target ranges > 2% but less than 5%; also targets which are less clearly specified, or even unannounced
converging	targets which decline over time
dominant	where there are two types of targets and one is attained but the other is not
primacy unclear	where it is not possible to identify which type of targets is dominant

Table 3: Key distinctions between related categories

related pairs	key distinctions
ERF versus ERT	in exchange rate fixes there is no separate autonomous foreign exchange market and the central bank is either a party to or sets the terms of every transaction; in exchange rate targeting there is an autonomous FX market in which agents are free to operate and the central bank intervenes from time to time
PERF vs AERF	in both the central bank ‘fixes’ the exchange rate; in AERF but not in PERF there are some other basic monetary policy instruments in use, typically aimed at other objectives
PERF or AERF vs PCB or ACB	in PCB or ACB (but not in PERF or AERF) all domestic currency is backed by foreign exchange reserves, which makes them more tightly regulated arrangements
AERF vs UD	in AERF the central bank deploys some basic monetary instruments but the ‘fixing’ of the exchange rate is the centrepiece of policy; in USD there may be some (temporary, varying) fixing or targeting of the exchange rate but the authorities are concerned with other objectives and are deploying a (limited) range of monetary instruments for those purposes
PCB vs ACB	in PCB there are no monetary policy instruments in use, in ACB there are some basic instruments available and used
MDC vs UD	MDC represents a command economy, where the financial system is merely the counterpart of the planning process, whereas in UD there is some kind of autonomous banking system which is at least partly independent of any state planning mechanism, within a wider context of markets which may be severely distorted but still function as markets
UD vs LSD	in UD the monetary policy instruments available are not effective (capable of producing the desired result) and the monetary policy objectives (with the trade-offs between them) are not clear; in LSD either the instruments are not effective but the objectives are clear, or the instruments are effective but the objectives are not clear, or both of these are satisfied only in part
LSD vs WSD	in WSD the instruments are effective (which implies the existence of an interbank money market and a government securities market) and the objectives (with the trade-offs between them) are clear; in LSD financial markets are less complete while instruments are less effective and/or objectives less clear

Table 4: Two useful aggregations

by target variable:	frameworks	Numbers
direct controls	MDC	1
exchange rate fix	PERF, AERF, PCB	2,3,4
exchange rate target	ACB, FERT, FCERT, LERT, LCERT	5,7,8,26,27
monetary target	FMT, FCMT, LMT, LCMT	9,10,28,29
inflation target	FIT, FCIT, LIT, LCIT	11,12,30,31
mixed targets	MwERT, ERwMT, M&ERT, MwIT, IwMT, M&IT, IwERT, ERwIT, I&ERT, ER&M&IT	13-22
unstructured discretion	UD	6
loosely structured discretion	LSD	23
well structured discretion	WSD	32
by stage of development of the monetary policy framework		
basic	MDC, PERF	1,2
intermediate 1	AERF, PCB, UD	3,4,6
intermediate 2	ACB, all LC*T, all FC*T, all L*T, all mixes, LSD	5,7-12,13-23, 27,29,31
developed	FERT, FMT, FIT, WSD	26,28,30,32

Table 5.1: Incidence of frameworks by category and period, full sample

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
X	173		99		74		0		0	
MDC	70	3.06	57	10.16	13	1.70	0	0.00	0	0.00
PERF	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
AERF	104	4.55	83	14.80	21	2.74	0	0.00	0	0.00
PCB	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ACB	104	4.55	6	1.07	35	4.57	39	7.22	24	5.71
UD	229	10.01	128	22.82	90	11.75	6	1.11	5	1.19
LERT	145	6.34	80	14.26	51	6.66	14	2.59	0	0.00
LCERT	13	0.57	7	1.25	6	0.78	0	0.00	0	0.00
LMT	36	1.57	21	3.74	15	1.96	0	0.00	0	0.00
LCMT	14	0.61	11	1.96	3	0.39	0	0.00	0	0.00
LIT	158	6.91	0	0.00	24	3.13	73	13.52	61	14.52
LCIT	58	2.54	0	0.00	12	1.57	33	6.11	13	3.10
MwERT	39	1.71	22	3.92	14	1.83	3	0.56	0	0.00
ERwMT	16	0.70	0	0.00	14	1.83	2	0.37	0	0.00
M&ERT	15	0.66	2	0.36	13	1.70	0	0.00	0	0.00
MwIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IwMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
M&IT	2	0.09	0	0.00	2	0.26	0	0.00	0	0.00
IwERT	10	0.44	0	0.00	4	0.52	2	0.37	4	0.95
ERwIT	6	0.26	0	0.00	3	0.39	3	0.56	0	0.00
I&ERT	8	0.35	0	0.00	4	0.52	3	0.56	1	0.24
ER&M&IT	2	0.09	0	0.00	2	0.26	0	0.00	0	0.00
LSD	526	23.00	94	16.76	259	33.81	115	21.30	58	13.81
UASC	25	1.09	11	1.96	14	1.83	0	0.00	0	0.00
CU	223	9.75	0	0.00	0	0.00	107	19.81	116	27.62
FERT	224	9.79	26	4.63	118	15.40	53	9.81	27	6.43
FCERT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
FMT	11	0.48	3	0.53	8	1.04	0	0.00	0	0.00
FCMT	14	0.61	10	1.78	4	0.52	0	0.00	0	0.00
FIT	220	9.62	0	0.00	31	4.05	85	15.74	104	24.76
FCIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WSD	15	0.66	0	0.00	6	0.78	2	0.37	7	1.67

Note: percentages are of total minus the Xs, which are cases where the country does not (yet) exist as a separate entity.

Table 5.2: Incidence of frameworks by category and period, advanced economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
X	25		11		14		0		0	
MDC	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
PERF	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
AERF	8	0.74	8	2.80	0	0.00	0	0.00	0	0.00
PCB	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ACB	36	3.33	6	2.10	14	3.85	9	3.70	7	3.70
UD	57	5.27	51	17.83	6	1.65	0	0.00	0	0.00
LERT	85	7.86	66	23.08	17	4.67	2	0.82	0	0.00
LCERT	13	1.20	7	2.45	6	1.65	0	0.00	0	0.00
LMT	36	3.33	21	7.34	15	4.12	0	0.00	0	0.00
LCMT	14	1.29	11	3.85	3	0.82	0	0.00	0	0.00
LIT	94	8.69	0	0.00	24	6.59	42	17.28	28	14.81
LCIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
MwERT	35	3.23	22	7.69	13	3.57	0	0.00	0	0.00
ERwMT	16	1.48	0	0.00	14	3.85	2	0.82	0	0.00
M&ERT	15	1.39	2	0.70	13	3.57	0	0.00	0	0.00
MwIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IwMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
M&IT	2	0.18	0	0.00	2	0.55	0	0.00	0	0.00
IwERT	6	0.55	0	0.00	2	0.55	0	0.00	4	2.12
ERwIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
I&ERT	4	0.37	0	0.00	4	1.10	0	0.00	0	0.00
ER&M&IT	2	0.18	0	0.00	2	0.55	0	0.00	0	0.00
LSD	129	11.92	45	15.73	67	18.41	12	4.94	5	2.65
UASC	25	2.31	11	3.85	14	3.85	0	0.00	0	0.00
CU	190	17.56	0	0.00	0	0.00	106	43.62	84	44.44
FERT	138	12.75	23	8.04	99	27.20	9	3.70	7	3.70
FCERT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
FMT	11	1.02	3	1.05	8	2.20	0	0.00	0	0.00
FCMT	14	1.29	10	3.50	4	1.10	0	0.00	0	0.00
FIT	146	13.49	0	0.00	31	8.52	61	25.10	54	28.57
FCIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WSD	6	0.55	0	0.00	6	1.65	0	0.00	0	0.00

Note: percentages are of total minus the Xs, which are cases where the country does not (yet) exist as a separate entity.

Table 5.3: Incidence of frameworks by category and period, emerging economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
X	147		88		60		0		0	
MDC	70	5.80	57	20.73	13	3.23	0	0.00	0	0.00
PERF	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
AERF	91	7.55	75	27.27	21	5.22	0	0.00	0	0.00
PCB	1	0.08	0	0.00	0	0.00	0	0.00	0	0.00
ACB	67	5.56	0	0.00	21	5.22	30	10.10	17	7.36
UD	170	14.10	77	28.00	84	20.90	6	2.02	5	2.16
LERT	60	4.98	14	5.09	34	8.46	12	4.04	0	0.00
LCERT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
LMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
LCMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
LIT	57	4.73	0	0.00	0	0.00	25	8.42	32	13.85
LCIT	65	5.39	0	0.00	12	2.99	39	13.13	14	6.06
MwERT	4	0.33	0	0.00	1	0.25	3	1.01	0	0.00
ERwMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
M&ERT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
MwIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IwMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
M&IT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IwERT	4	0.33	0	0.00	2	0.50	2	0.67	0	0.00
ERwIT	6	0.50	0	0.00	3	0.75	3	1.01	0	0.00
I&ERT	4	0.33	0	0.00	0	0.00	3	1.01	1	0.43
ER&M&IT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
LSD	400	33.17	49	17.82	192	47.76	99	33.33	53	22.94
UASC	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
CU	33	2.74	0	0.00	0	0.00	1	0.34	32	13.85
FERT	86	7.13	3	1.09	19	4.73	44	14.81	20	8.66
FCERT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
FMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
FCMT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
FIT	74	6.14	0	0.00	0	0.00	24	8.08	50	21.65
FCIT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
WSD	14	1.16	0	0.00	0	0.00	6	2.02	7	3.03

Note: percentages are of total minus the Xs, which are cases where the country does not (yet) exist as a separate entity.

Table 6.1: Incidence of frameworks aggregated by target variable and period, full sample

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
direct controls	70	3.43	57	10.36	13	1.73	0	0.00	0	0.00
ER fix	104	5.10	83	15.09	21	2.79	0	0.00	0	0.00
ER target	486	23.84	119	21.64	210	27.93	106	24.48	51	16.78
MT	75	3.68	45	8.18	30	3.99	0	0.00	0	0.00
IT	436	21.38	0	0.00	67	8.91	191	44.11	178	58.55
mixed targets	98	4.81	24	4.36	56	7.45	13	3.00	5	1.64
UD	229	11.23	128	23.27	90	11.97	6	1.39	5	1.64
LSD	526	25.80	94	17.09	259	34.44	115	26.56	58	19.08
WSD	15	0.74	0	0.00	6	0.80	2	0.46	7	2.30

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 6.2: Incidence of frameworks aggregated by target variable and period, advanced economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
direct controls	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
ER fix	8	0.92	8	2.91	0	0.00	0	0.00	0	0.00
ER target	272	31.37	102	37.09	136	38.86	20	14.60	14	13.33
MT	75	8.65	45	16.36	30	8.57	0	0.00	0	0.00
IT	240	27.68	0	0.00	55	15.71	103	75.18	82	78.10
mixed targets	80	9.23	24	8.73	50	14.29	2	1.46	4	3.81
UD	57	6.57	51	18.55	6	1.71	0	0.00	0	0.00
LSD	129	14.88	45	16.36	67	19.14	12	8.76	5	4.76
WSD	6	0.69	0	0.00	6	1.71	0	0.00	0	0.00

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 6.3: Incidence of frameworks aggregated by target variable and period, emerging economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
direct controls	70	5.97	57	20.73	13	3.23	0	0.00	0	0.00
ER fix	96	8.19	75	27.27	21	5.22	0	0.00	0	0.00
ER target	214	18.26	17	6.18	74	18.41	86	29.05	37	18.59
MT	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
IT	196	16.72	0	0.00	12	2.99	88	29.73	96	48.24
mixed targets	18	1.54	0	0.00	6	1.49	11	3.72	1	0.50
UD	172	14.68	77	28.00	84	20.90	6	2.03	5	2.51
LSD	397	33.87	49	17.82	192	47.76	103	34.80	53	26.63
WSD	9	0.77	0	0.00	0	0.00	2	0.68	7	3.52

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 7.1: Incidence of frameworks aggregated by stage of development and period, full sample

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
basic	70	3.43	57	10.36	13	1.73	0	0.00	0	0.00
intermediate 1	333	16.33	211	38.36	111	14.76	6	1.39	5	1.64
intermediate 2	1166	57.18	253	46.00	465	61.84	287	66.28	161	52.96
developed	470	23.05	29	5.27	163	21.68	140	32.33	138	45.39

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 7.2: Incidence of frameworks aggregated by stage of development and period, advanced economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
basic	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00
intermediate 1	65	7.50	59	21.45	6	1.71	0	0.00	0	0.00
intermediate 2	501	57.79	190	69.09	200	57.14	67	48.91	44	41.90
developed	301	34.72	26	9.45	144	41.14	70	51.09	61	58.10

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 7.3: Incidence of frameworks aggregated by stage of development and period, emerging economies

	1974-2014		1974-84		1985-1998		1999-2007		2008-2014	
	no.	%	no.	%	no.	%	no.	%	no.	%
basic	70	5.97	57	20.73	13	3.23	0	0.00	0	0.00
intermediate 1	268	22.87	152	55.27	105	26.12	6	2.03	5	2.51
intermediate 2	665	56.74	63	22.91	265	65.92	220	74.32	117	58.79
developed	169	14.42	3	1.09	19	4.73	70	23.65	77	38.69

Note: percentages are of the total minus the sum of the Xs, which are cases where the country does not (yet) exist as a separate entity, and the UASCs and the CUs, where the country has no specific national monetary policy framework.

Table 8.1: Duration of frameworks by country type

	Advanced		Emerging		All countries		All countries		
	Episodes	Duration	Episodes	Duration	Episodes	Duration	Incidence 1974	Incidence 1998	Incidence 2014
MDC	0	0	7	10	7	10	7	0	0
PERF	0	0	0	0	0	0	0	0	0
AERF	2	4	11	8.7	13	8	11	0	0
PCB	0	0	0	0	0	0	0	0	0
ACB	2	18	4	17	6	17.3	1	5	3
UD	6	9.5	20	8.6	26	8.8	10	2	1
LERT	10	8.3	6	10	16	8.9	7	3	0
LCERT	2	7.5	0	0	2	7.5	0	0	0
LMT	7	5.1	0	0	7	5.1	1	0	0
LCMT	2	7	0	0	2	7	0	0	0
LIT	9	10.4	9	7.1	18	8.8	0	2	7
LCIT	0	0	9	6.4	9	6.4	0	4	1
MwERT	5	7	1	4	6	6.5	0	2	0
ERwMT	4	4	0	0	4	4	0	1	0
M&ERT	3	5	0	0	3	5	0	0	0
MwIT	0	0	0	0	0	0	0	0	0
IwMT	0	0	0	0	0	0	0	0	0
M&IT	1	2	0	0	1	2	0	0	0
IwERT	2	3	1	4	3	3.3	0	1	1
ERwIT	0	0	2	3	2	3	0	0	0
I&ERT	1	4	1	4	2	4	0	1	0
ER&M&IT	1	2	0	0	1	2	0	1	0
LSD	20	6.5	30	13.2	50	10.5	10	19	8
UASC	1	25	0	0	1	25	1	1	0
CU	12	15.8	5	6.6	17	13.1	0	0	18
FERT	11	12.5	7	12.3	18	12.4	3	11	3

FCERT	0	0	0	0	0	0	0	0	0
FMT	2	5.5	0	0	2	5.5	0	0	0
FCMT	2	7	0	0	2	7	0	0	0
FIT	10	14.6	8	9.25	18	12.2	0	6	17
FCIT	0	0	0	0	0	0	0	0	0
WSD	1	6	1	9	2	7.5	0	0	1

Note: duration is the average duration of each framework across all episodes.

Table 9.1: Economic performance by aggregated framework and period, advanced economies

	1974-84		1985-98		1999-2007		2008-2014	
	inflation	growth	inflation	growth	inflation	growth	inflation	growth
Direct controls	..	..	..	..	..	..	..	..
ER fix	16.66	4.55	..	..	..	..	..	..
ER target	10.14	2.19	4.12	2.60	0.84	3.02	2.78	0.82
MT	10.50	4.47	4.55	4.08	..	..	..	..
IT	..	..	1.96	2.58	2.07	2.72	2.06	0.63
mixed targets	9.35	2.15	3.93	2.38	2.90	3.09	-0.17	0.51
UD	24.25	0.51	..	..	..	..	..	..
LSD	8.89	0.54	6.37	1.99	1.23	1.80	..	..
WSD	..	..	3.50	1.20	..	..	..	..
basic	..	..	..	..	..	..	..	..
intermediate 1	23.09	1.86	17.72	0.97	..	..	..	..
intermediate 2	10.16	1.74	5.12	2.59	1.51	2.70	2.64	0.53
developed	7.61	0.93	2.95	2.49	2.14	2.69	2.13	0.54
total	12.25	2.40	4.36	2.58	2.06	2.58	2.06	-0.05

Note: the total row shows the average inflation and growth under all frameworks, including UASC and CU.

Table 9.2: Economic performance by aggregated framework and period, emerging economies

	1974-84		1985-98		1999-2007		2008-2014	
	inflation	growth	inflation	growth	inflation	growth	inflation	growth
Direct controls	32.29	4.18	4.41	4.30	..	..	..	..
ER fix	10.67	4.55	4.11	4.25	..	..	..	..
ER target	7.77	3.98	12.63	4.27	2.96	4.62	3.59	0.52
MT	..	..	..	..	..	..	..	..
IT	..	..	10.42	4.45	4.15	3.64	4.22	2.23
mixed targets	..	..	10.74	3.29	5.00	5.25	4.60	5.54
UD	91.07	1.35	342.66	0.15	40.89	2.19	35.63	0.92
LSD	17.29	1.84	78.73	2.01	10.09	4.09	8.88	2.37
WSD	..	..	..	..	2.82	5.54	2.55	2.31
basic	32.29	4.18	4.41	4.30	..	..	..	..
intermediate 1	49.20	2.92	277.03	1.12	40.89	2.19	35.63	0.92
intermediate 2	14.68	2.40	60.92	2.64	6.97	4.11	6.74	1.94
developed	18.23	2.23	7.56	3.49	2.67	4.34	3.12	2.00
total	37.75	2.88	112.15	2.25	6.63	4.13	5.50	1.76

Note: the total row shows the average inflation and growth under all frameworks, including UASC and CU.

Figure 1: Incidence of monetary policy frameworks over time, full sample of countries, full menu of frameworks

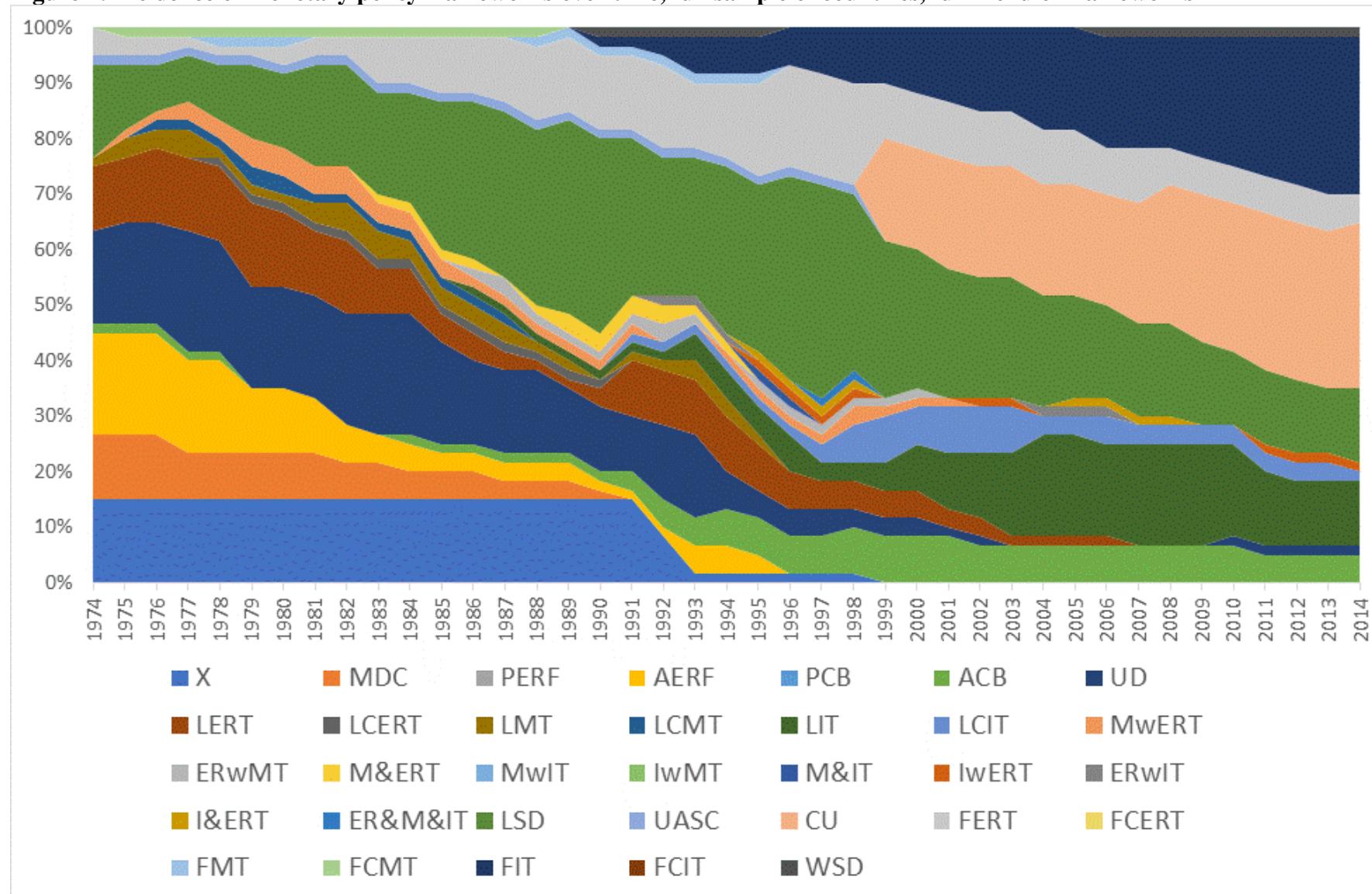


Figure 2: Incidence of monetary policy frameworks, advanced economies, full menu

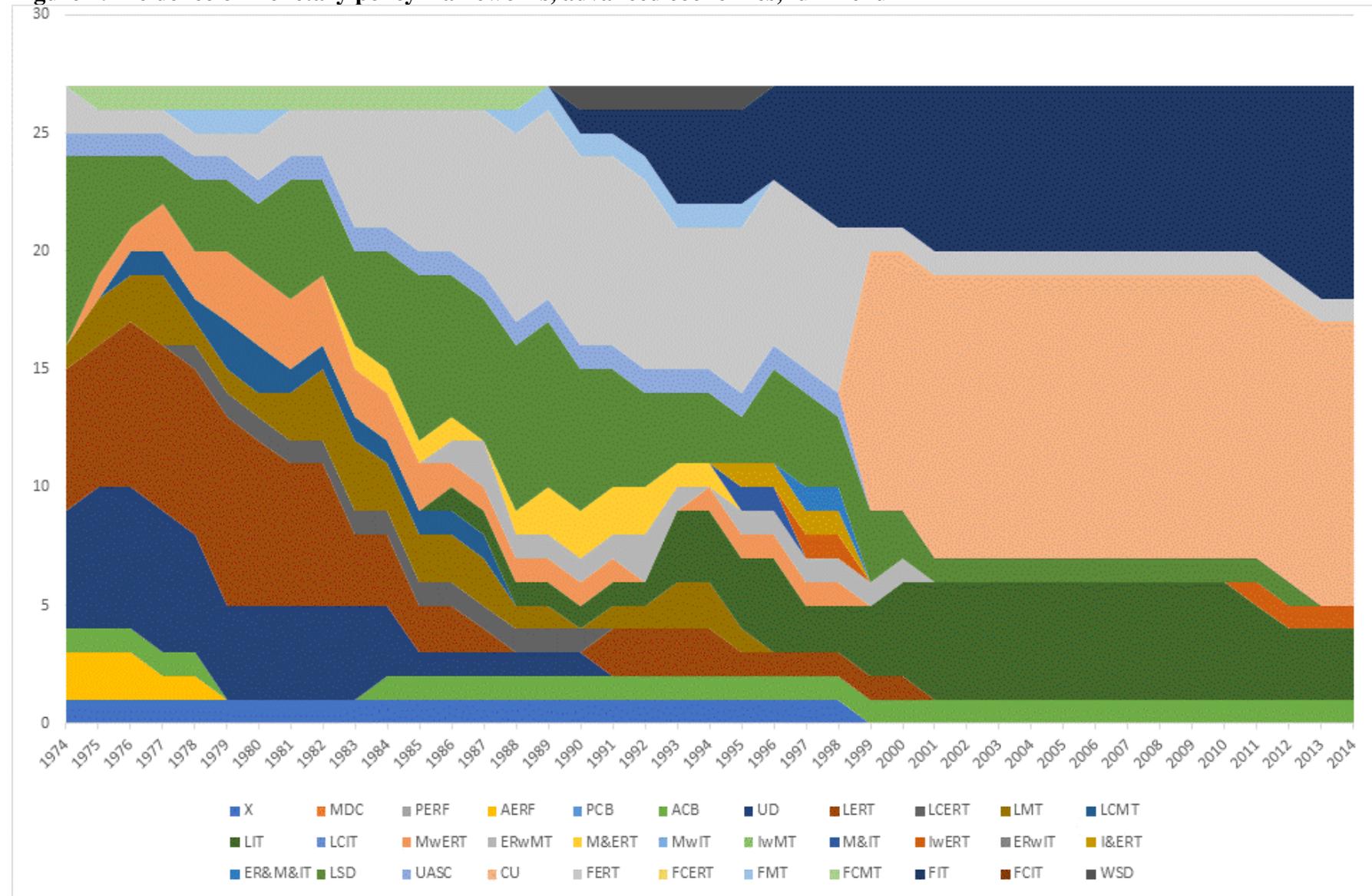


Figure 3: Incidence of monetary policy frameworks, emerging economies, full menu

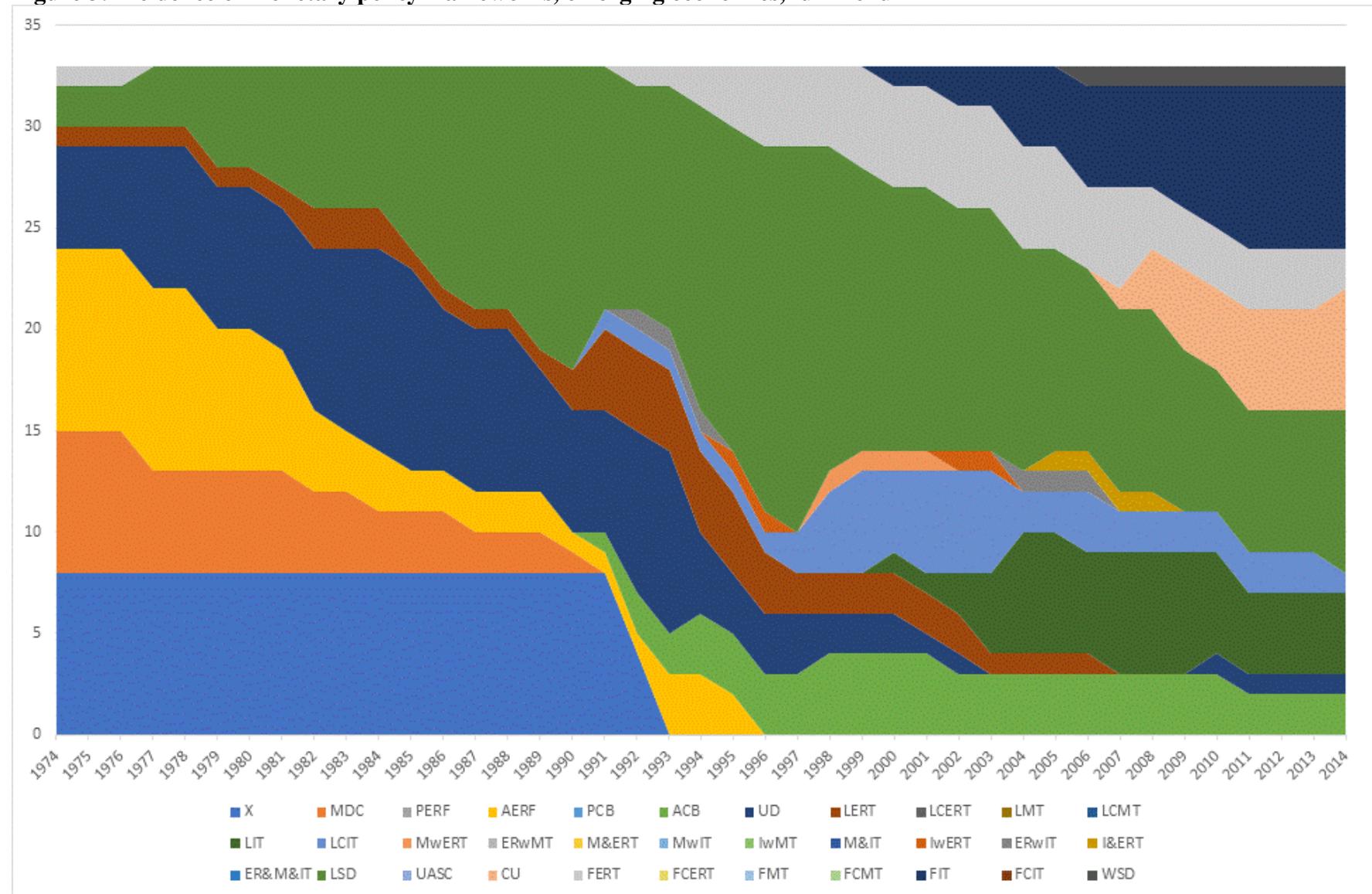


Figure 4: Incidence of monetary policy frameworks, advanced economies, by target variable

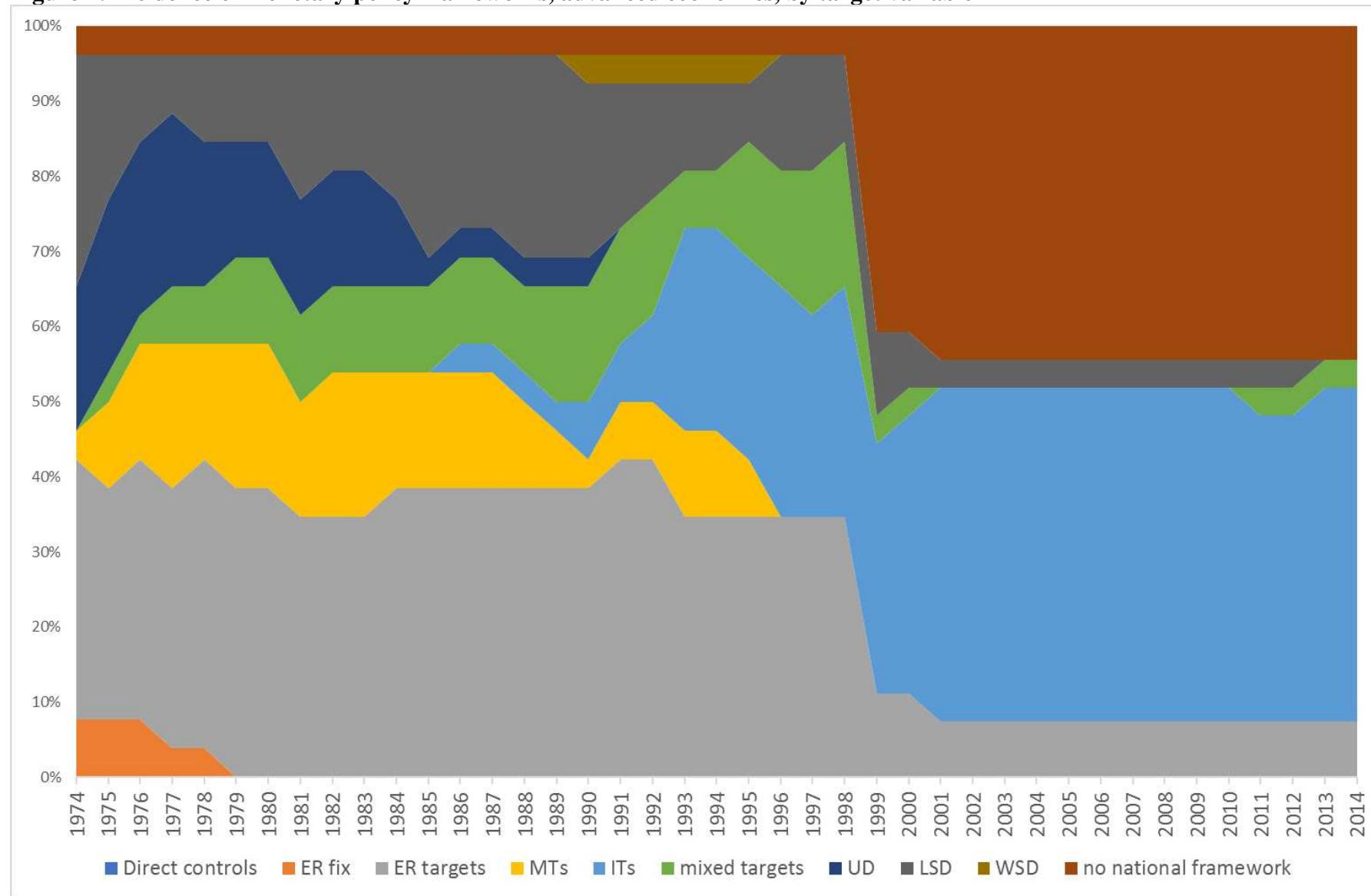


Figure 5: Incidence of monetary policy frameworks, advanced economies, by target variable, excluding CUs

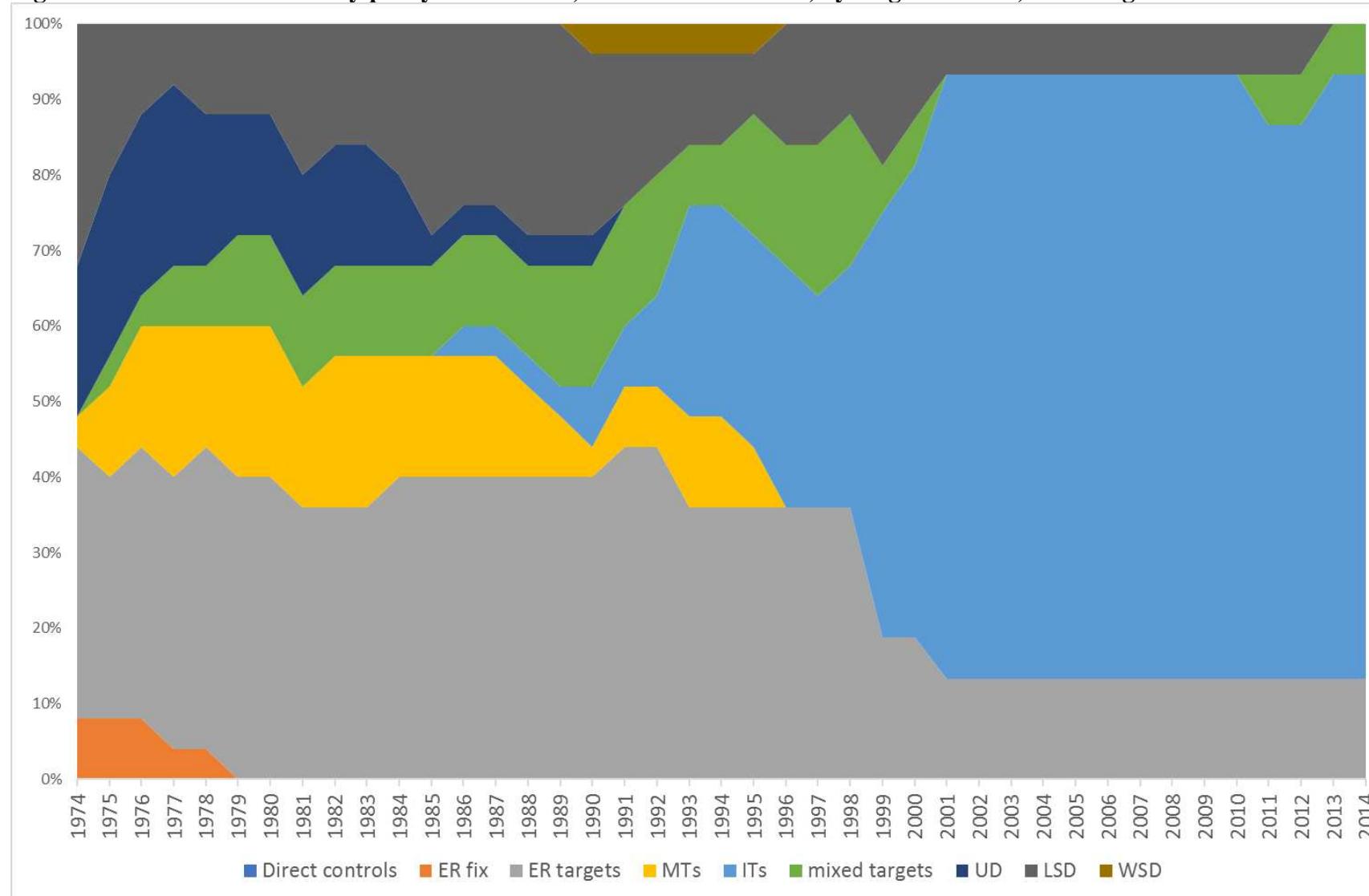


Figure 6: Incidence of monetary policy frameworks, emerging economies, by target variable

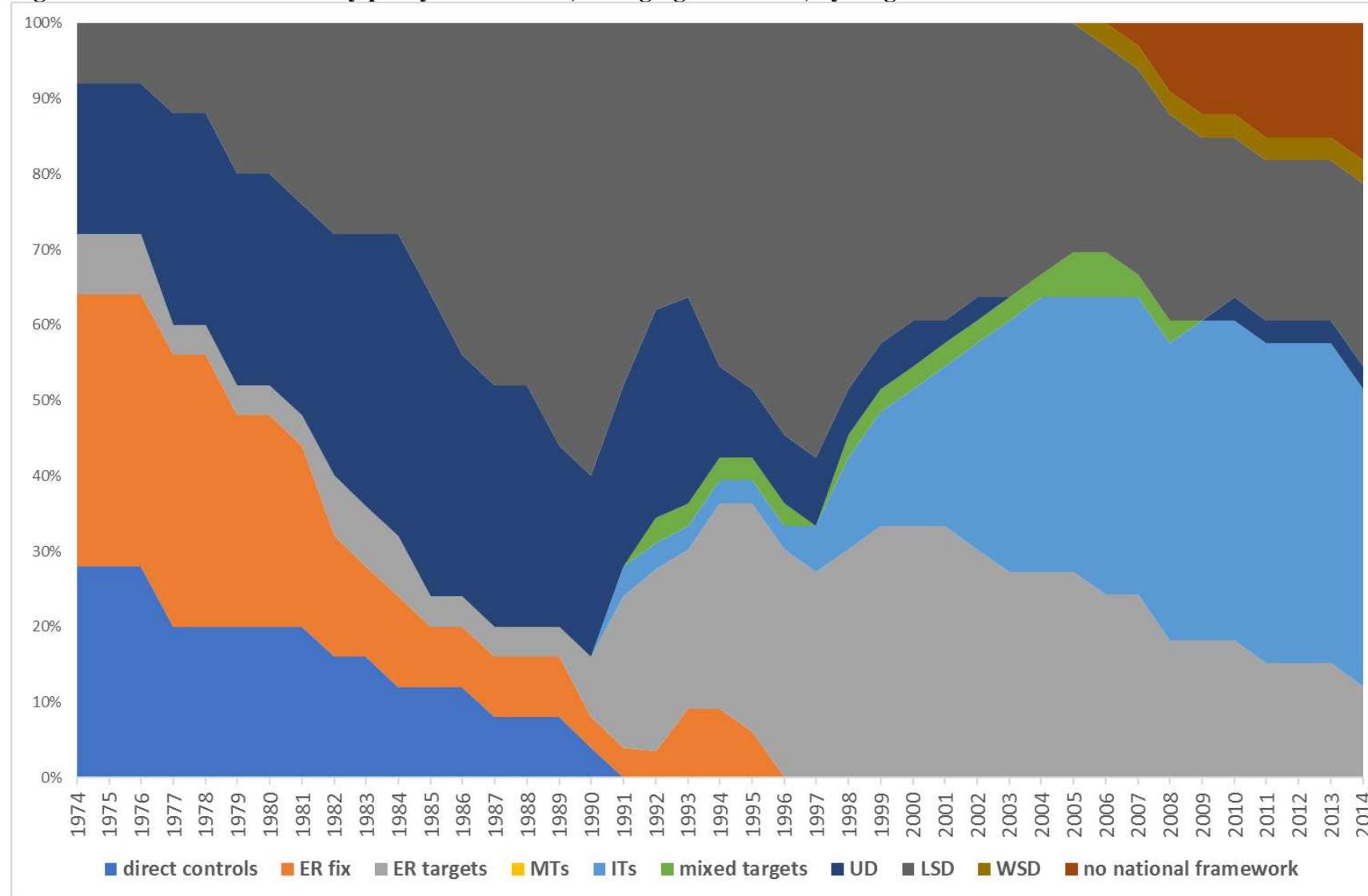


Figure 7: Incidence of monetary policy frameworks, advanced economies, by stage of development, excluding CUs

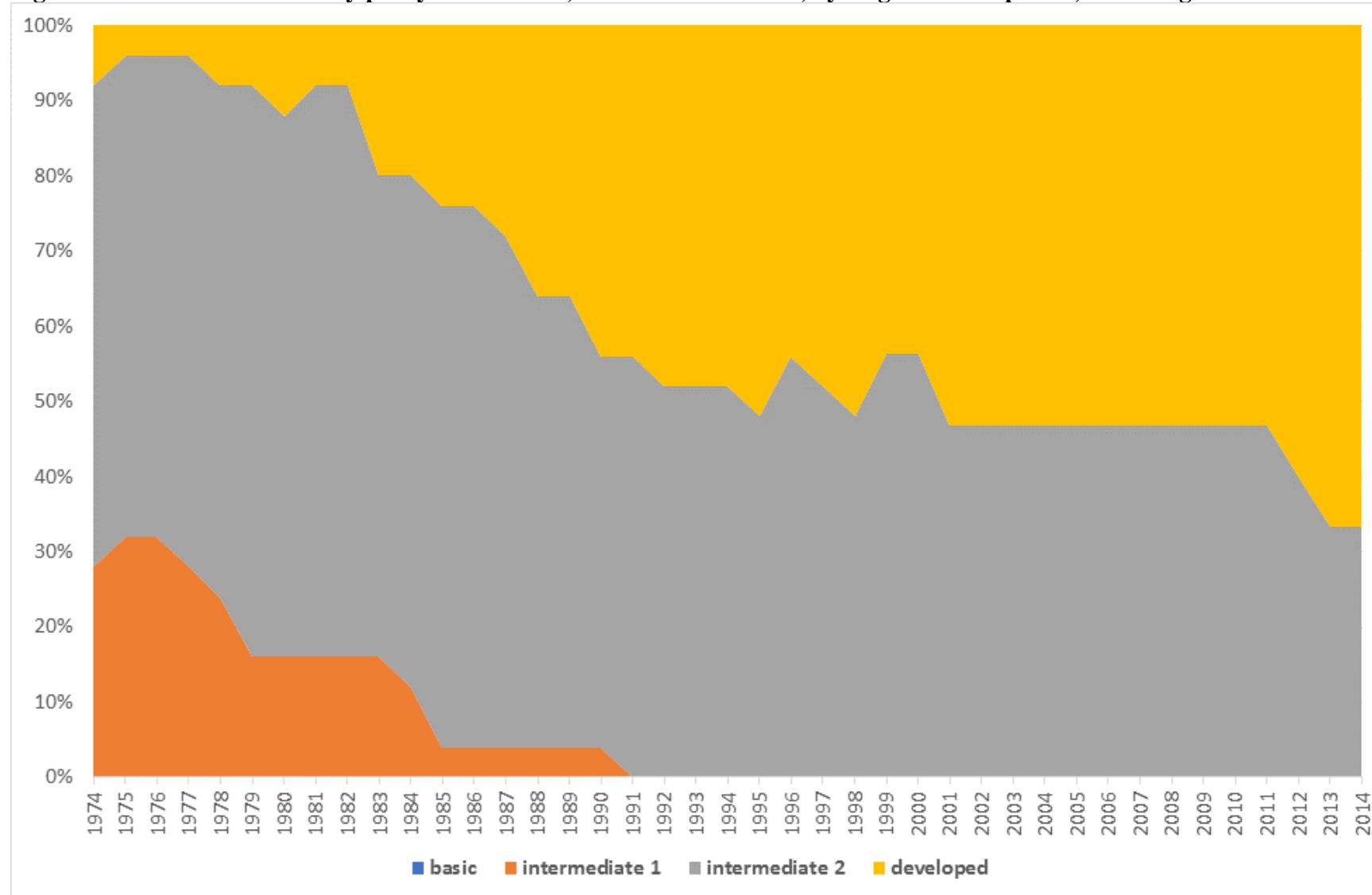


Figure 8: Incidence of monetary policy frameworks, emerging economies, by stage of development, excluding CUs

