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A Post Keynesian approach to structural credit rationing:

Abstract

New Keynesian theories of credit rationing usually explain credit rationing by adverse selection and moral hazard effects that arise when applicants appear to be identical but can not be fully observed by a bank for some reason (amongst others Stiglitz and Weiss 1981; Jaffee and Russell 1976). Consequently they fail to explain how credit can be rationed because of specific characteristics of a group of applicants. Post Keynesians (Wolfson 1996) have tried to explain credit rationing under fundamental uncertainty by widening the New Keynesian asymmetric information assumption to asymmetric expectations and to clarify the often rather vaguely formulated "fringe of unsatisfied borrowers".

We argue that, while asymmetric expectations may be a reasonable but very general explanation for credit refusals, differences in the informational outsets of enterprises and banks can explain why certain groups of applicants may be structurally rationed. Accounting for specific informational structures, that arise under fundamental uncertainty, shows that in enterprises where there is a division of ownership and control caused by their specific agency problem as well as by typical management aims, "information" is produced that is compatible with or at least cheaply adjustable to the evaluation-apparatuses of banks' who generally face similar problems. Therefore the form in which an applicant is able to provide information can become an essential or a least risk-premium-reducing factor. In enterprises where the agency problem is not a strong argument and where decisions therefore are likely to be based more strongly on animal spirits or unconventional informational processes this can lead to a fail to produce bank-compatible information when applying for credit. The proposed paper aims at developing a Post Keynesian approach that can explain restricted access to credit out of organisational aspects without offending the endogenous money supply assumption.

A Post Keynesian approach to structural credit rationing:

Introduction

New Keynesian theories of credit rationing usually explain credit rationing by adverse selection and moral hazard effects, that arise when applicants can not be fully observed by banks for some reason and therefore appear to be identical, even though they belong to different risk groups (amongst others Stiglitz and Weiss 1981; Jaffee and Russell 1976). The essential underlying assumption is that a credit-applicant has more information about an investment project than the borrower and that there is no possibility to transfer this information credibly. Consequently these theories do not explain how credit can be rationed for specific groups of applicants. Post Keynesians (Wolfson 1996) have tried to explain credit rationing under fundamental uncertainty by widening the New Keynesian asymmetric information assumption to asymmetric expectations and to clarify the often rather vaguely formulated "fringe of unsatisfied borrowers". Asymmetric expectations on the other hand do not include any potential informational frictions into their explanation.

The argument developed here is that tough asymmetric expectations are a very reasonable but general explanation for credit refusals, differences in the informational systems of (some) enterprises and banks can explain structurally restricted access to credit for specific groups of applicants that are independent of their overall financial condition and the profit prospects of their projects. A different exposure to uncertainty of certain market participants and decision makers can lead to the employment of divergent information-based decision processes, that may turn out to be incompatible aggravating or at worst preventing market communication and therefore business between certain firms. As information plays a crucial role within the credit risk evaluation process, this can lead to structural credit restrictions for all enterprises that employ informational systems that are remarkably different to those of banks and this can be an additional source of explanation for finance constraints of small and medium sized enterprises.

The paper is structured as follows: After the usage of uncertainty is clarified in the next section, the second section will offer several factors that can cause the reliance on information-based decision processes to a different extent and introduces an approach to confidence-determined decision making under uncertainty. Finally, the last section attempts to examine possible effects of informational frictions on the credit market, building upon the endogenous money supply assumption.

What kind of Uncertainty?

Decisions and different "stages of uncertainty"

Before discussing possible effects of uncertainty on decision processes it is necessary to outline the concept of uncertainty that is used here. A diversification of roughly three stages of "uncertainty" each influencing a different set of decisions shall be established. Firstly there are objective probabilities governing certain situations. These are situations where, at least in theory, existing probabilities governing certain situations can be revealed (e.g. trough the use of industrial methods of quality measurement) and asymmetric information of the New Keynesian type can (and will) exist. The well-known example of the market for used cars (Akerlof 1970) is an ideal example here. This situation is better described by probabilistic risk than by the use of the word uncertainty. The field of risky decisions will cover most consumption decisions (those where preferences can be assumed to be constant over the period of consumption) and minor investment decisions, such as maintenance expenditures where a demand situation is faced that can reasonably be assumed to be constant. This idea has been analysed in depth and there is no need to discuss it further here.

A second type is fundamental uncertainty in its strongest form describing a state of absolute ontological openness (Dunn 2001). This term shall be reserved to situations in which no uncertainty-reducing factors like conventions, rules of thumb or habitual procedures are present. Fundamental uncertainty in this sense here is assumed to exist in regard of radical innovations in the sense of Richardson "... where major breakthroughs so change the industrial landscape as to permit routine product and process development to set off in new directions. The internal combustion engine represented a radical innovation, while the continuous development to which it has been subjected since its introduction may be called routine." (Richardson 2002, S.20) Often – especially as the starting point of many innovations is sometimes rather accidental than planned – not even experts are able to imagine specific developments, or the possible impact they may have on the overall-situation, even within their narrow field of specialisation, not to mention novices or amateurs. It would be ridiculous to assume that *everybody* attaches probabilities to events that are way beyond the capabilities of their imagination and what sense should it make to proceed like that, if not even the possible consequences of such events can be assessed. A "haven't got a clue" or "damn the torpedoes full speed ahead" approach – as proposed by Davidson (Davidson 1991) – seems to be reasonable here and decisions will be reduced to a certain minimum whose extent will be determined by animal spirits only. The decisions that underlie fundamental uncertainty here

are reserved to a reduced spectrum of investment decisions, that have to be made in connection with radical innovation and are not the major field of interest in this paper.

Finally there exist situations of conditional uncertainty (elaborated in depth by James Crotty 1994). Certainly the existence of fundamental uncertainty for radical innovations makes it impossible also for possible outcomes of most routine innovations and investments – that will underlie conditional uncertainty – to be reduced to "true" probability distributions, as radical innovations may have an unforeseeable impact on the possible outcomes of investments in routine innovations (e.g. their productive capabilities may become obsolete trough new inventions). Still the very character of interaction within a capitalist production economy itself will lead to the implementation of conventions and decisional routines[1], as the use of them frequently is the most efficient and successful strategy to cope with uncertainty. This furthermore will be fuelled by the fact that decisions in organisations – and it is assumed here that the vast majority of uncertain decisions are effectively made in organisations – need at least some standardisation (for several reasons outlined below). These decisions-making processes in firms will be interdependently created and will gain relative stability over longer periods of time. Phases of conventional stability, in which the extent to that uncertainty is present within the decision process is reduced, will be created and market participants' behaviour, to some extent, will be more predictable than under fundamental uncertainty. Alternatively put, despite of an ontological openness heuristics will be employed and there will be phases of stable heuristics in a steady interplay with crises of confidence. Nonetheless, though stages of conventional and therefore conditional uncertainty will be dominant, occasional radical innovations and the underlying capitalist process itself – interpreted as a constant struggle for power positions and relative shares of the distribution of incomes and output - will cause disruptions of stability and therefore occasional confidence crises.

Expectation formation

Post Keynesian analysis of behaviour under uncertainty typically falls into two groups when it comes to the question how expectations are formed. One group assumes that exogenous expectations are the sine qua non of a free human will (e.g. Davidson 2002) and that decision-makers are governed by exogenous expectations – i.e. animal spirits and schumpeterian characteristics – only. Another group allows for an at least partly endogenous influence on expectations (e.g. Crotty 1994).

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[1] Routines are understood here in the sense as used by Hodgson and Knudsen (2004) as "... an executable *capability* for repeated performance in some *context* that has been *learned* by an organisation in response to *selection pressures*."

In connection with the diversification of three stages of uncertainty above it is assumed here that in situations of probabilistic risk endogenous expectations, i.e. projections of past evidence into the future, govern human behaviour. Though there might exist situations under probabilistic risk as well where an analysis leading to "correct" forecasts seems, or is too costly relatively to prospective gains, where it makes sense therefore to use rules of thumb, there will exist an evolutionary process in which those decision-makers, who best recognise these probabilities will "survive". In situations of FU (as defined above) on the other hand exogenous expectations will be responsible for human decisions. Hereby there will be no evidence or no peer-group behaviour that can be imitated and decisions will depend on animal spirits and intuition only. Conditional uncertainty finally will be governed jointly by endogenous – evidence-influenced – and by exogenous expectations. The amount of endogenous or exogenous parts within the expectation-formation certainly will depend upon the exposure of decision makers to institutional procedures, rules and prescriptions and to the type and frequency of a decision. The "lonelier" and more seldom a decision is made, the more the succeeding assessment of the results therefore is a task of the decision maker himself the larger the amount of exogenous parts will be. As the decisions that are the major topic of the succeeding section can be subsumed under conditional uncertainty, the following discussion is focused on the decision making processes that are likely to emerge under this type of uncertainty.

Information, decisions and information-based decision processes under conditional uncertainty

What role does information has for decisions, when the future is uncertain and probable future outcomes can not be (exactly) derived by the use of past evidence? The following discussion will show that even under uncertainty information can play a considerable role for the decision-making process.

Individual factors influencing decision making

There has been much evidence in psychological economics that people are not or can not be totally honest when it comes to the assessment of their own performance. People have the ability to remember, but at the same time the power to repress and make heavily use of this power, creating a selective memory. Humans like to see themselves as smart nice people and evidence that conflicts with this view tends to be suppressed or accommodated by changes in

beliefs. In fact most cognitive dissonance arises out of this. (Akerlof, G. A.; Dickens W. T. 1982).

The main resulting problem being of interest here is that this magical mirror will be broken whenever decision makers find themselves in the role of delegates and therefore do not assess the quality of their decisions (only) themselves. In such situations these cognitive biases will lead to structural conflicts. There will be a systematic dissonance between a delegate's own judgement, considering the quality of a certain decision and that of her supervisors. The result will be a serious decision aversion whenever there is a lack of fundamental reasons that can justify a decision ex post. Predefined information-based decision processes therefore will be happily accepted and excessively used by delegated decision makers. What is important for such processes to be accepted and applied by delegates is not so much the question if these processes are effectively able to ameliorate the outcome of a decision (or if delegates believe that they do so) but the fact that they protect delegates in the face of uncertainty from punishment caused by (unforeseeable) unfavourable outcomes of their decisions.

Additionally general heuristics of individual decision making such as availability, representativeness and anchoring will influence the use of conventional decision processes (Harvey 1998). Anchoring means that people seldom move far away from their starting point when adjusting initial estimations. Representativeness generally speaking refers to the habit to suppose, that the more an outcome resembles a process the more likely it is that the outcome was generated by this process. Availability finally means that the easier an instance can be imagined the more likely it is assumed.

Decision making in firms

A large and dominant part of modern firms is influenced by two specific features of contemporary capitalism. The division of ownership and control, that makes it difficult for the proper owners of a firm to control and evaluate activities of the management and specific effects of financialisation, such as the development of a market for corporate control (Stockhammer 2004, p.738), that probably is not or only slightly able to evaluate a management's performance better than "traditional" shareholders, but still is more willing to intervene when being disappointed and therefore has led to a shift of the objectives of firms. There is much reason to agree with James Crotty that „... top managers are not especially concerned with the long-term prospects of firms that they used to work for. When autonomy is threatened, whether by disenchanted stockholders, corporate raiders, or concerned creditors, all other objectives become subsidiary to the struggle to retain autonomy." (Crotty 1990,

p.534). Though as job- and autonomy-maintenance can be identified as the major objectives of top managers – that may only step behind growth objectives when subjective uncertainty is reduced trough long phases of stability – managers will aim to meet prior objectives of the major participants in the "market for corporate control".

This specific situation coincides with the lack of any objective absolute evaluation criteria to measure the performance of a firm and therefore the quality of the management in situations of conditional uncertainty. *Relative* performance measurement becomes a key evaluation factor whenever there are no absolute benchmarks and sometimes even if such benchmarks existed. In a situation like that, doing what everybody else does – as it guarantees that one will not (excessively) under-perform the market – is likely to leave decision makers in a more secure position with respect to their objectives, than innovative and so to say heterodox behaviour. If one firm does badly and all other firms (in the peer-sector) do badly as well, the management usually will not be blamed. But if conversely one firm does badly while all other firms do well, this will be a serious threat to managerial autonomy and probably may cause the loss of the management's position or autonomy. Certainly this argument works in two directions and performing better than everybody else can only be reached by an unorthodox behaviour but in connection with the specific situation of major decision makers – when acting as delegates of a "market for corporate control" – and their typical objectives – as the maintenance of their partly rent-producing, power-positions – the rise and systematic employment of conventions is a logical result. As Keynes stated "[w]ordly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally." (Keynes 1973VII, p.158)

Not only will the top management be influenced by this aspect but actually everybody within an organisation to whom decisions are further delegated. Most delegated decision makers, wherever situated in a hierarchy, do not try to optimise the direct outcome of their decisions but the personal consequences associated with the decisions they take. In fact, the threat that it may become necessary to justify one or the other decision ex post will be sufficient to induce an information-seeking and using behaviour in accordance with the institutional structure of an organisation ex ante. Certainly, if a decision leads to a gain there will not be a lot of fuzz about how this decision was produced (though even then unconventional behaviour sometimes may be punished). However *every* loss that is big enough to trigger further investigation will lead to considerably worse consequences, when the decision can not be justified by the use of defined and organisationally respected information and by action "according to the rules", than even larger losses associated with proper bureaucratic

behaviour. Information in this context is not necessarily suitable to generate "real" knowledge but rather a factor able to carry responsibility and to trigger decisions. Information-based decision procedures therefore reduce uncertainty, not necessarily with regard to the outcome but especially considering the personal fate of the decision maker. Additionally information-based procedures provide principals with an "objective" instrument of supervision to prevent diverse forms of nepotism. Somehow these procedures guarantee a minimum of decision that probably would not be produced without them.

The rise of information-based decision processes

Thus far several factors have been established, that motivate the generation of information-based decision processes in modern enterprises, even if information about the future did not exist (as claimed amongst others by Davidson 2002). Objectives of top managers, who will aim at job and autonomy maintenance, together with relative performance measurement favour the orientation on conventions. The implementation of these conventions as information-based processes within an organisation additionally will be favoured by a structural aversion of agents to decide as delegates, when outcome is uncertain and by the subjective uncertainty-reduction capabilities therefore employed by clearly defined decision procedures. Provided that the organisational procedures have been observed a delegate will not have to carry the direct negative consequences associated with a "failed" decision.

This situation will lead to at times highly specified procedures and rules of thumb such as pay-back periods for investment decisions, mark-up pricing, financial and leverage ratios and the like (Lavoie 1992) with definitions of events and "right" decisions in the case of one of these specific events (Setterfield 2003) and similar forms of formal and informal institutionalised routines and animal spirits will step back behind. The often high degree of standardisation and formalisation of conventions trough information-based procedures again makes their further diffusion easier, as adaptation is simplified. Certainly the extent to which these procedures will be developed and applied will depend on certain institutional aspects, especially the legal form and environment and the respective size of a firm.

Conditional uncertainty and information-based decision processes

Though conventional decision processes will exist that are building upon the outcome of some information-based forecast, the remaining ontological openness of the underlying system will leave a crucial role for confidence. This confidence will become a determining factor for decisions and a distinction has to be made between a forecast derived from a conventional

process, perhaps best imagined as a subjective probability (implicitly or explicitly) and the confidence in these forecasts. A high probability will not be able to offset low confidence in a prediction. Therefore confidence may be best imagined as some kind of a stop/go-criterion – a gatekeeper so to say – that has to be passed before the result of a projection process is allowed to trigger a decision (or respectively before a projection is effectively made).

Confidence will be determined on two levels. On the one hand the confidence in a process itself will be a major factor of influence. Experience is important here. It will be taken into account if a process has produced mainly "reliable" forecasts thus far or if there have been substantial errors as well. On this level it is determined if a process actually is employed at all. On the other hand confidence will be codetermined on the level of a situational analysis. In historical time, in which economic systems evolve, no situation is exactly repeated. Yet an information-based decision process, being reductive in character, usually only defines one ideal situation and a succeeding decision. Agents have to decide for each application separately, if a certain process is adequate for the specific situation. Availability and representativeness again will be forces influential hereby. As typically there will be some kind of reference-set defining the ideal type and quantity of information that shall be used to decide (or that effectively leads to a decisional output) this will be done by an assessment of the quality, completeness and type of information available. Two factors are important in this respect. Firstly the amount of information available compared to the amount of information required will be a major force determining the confidence in a forecast. It is not the absolute amount of information that is important in this respect but the relative amount in respect to the prefixed reference-set. Secondly the framing of the information will play a crucial role (Harvey 1998). Information will be required in a specific form. If a decision maker is not able to adjoin a specific piece of inputted information to a specific piece of required information this will lead to the same consequences as if the information was not provided at all. Put in other words the informational set X $(x_1, x_2, \ldots. x_n)$ can lead to a negative decision when the informational set Y $(y_1, y_2, \ldots. y_n)$ describing the same underlying economic fact would lead to a positive decision. Certainly this can and will lead to structural communication biases between industries as well.

This also signifies the main difference to the New Keynesian case of asymmetric information, where one side is able to found her decision on the informational set X $(x_1, x_2, \ldots. x_n)$ and the other side only has access to the informational set X $(x_1, x_2, \ldots. x_{n-z})$. With conditional uncertainty there is not only one possibility to make forecasts of uncertain future outcomes and different decision makers may and will use differing procedures that again will build

upon different informational inputs and consequently will produce different informational outputs.

The divergence to the asymmetric expectation case is, that not only different expectations are formed over the same underlying data (in fact the asymmetric expectations case would reduce table one to the upper column), but that differences in the used information alone can lead to structural decisional biases between different firms. Otherwise put, even with potentially identical expectations, incompatible informational systems can lead to market frictions.

Table 1

Effects of confidence on probability forecasts

	Favourable probability	Unfavourable probability
High confidence	Positive decision	Rejection
Low confidence	Postponement	Postponement

The possible effects of these decision processes are summarised in table 1. Only when confidence is high and a probability forecast is favourable a positive decision will be made. Whenever confidence is low there will be a postponement. When missing or incompatible information is the cause then a postponement until additional or better information is eventually obtained will be the result. If confidence in a process itself is low there will be a postponement until a new process is eventually developed, that can be applied in the specific situation. Certainly if there is no additional information or information in the form required that can be obtained the effects will be identical with that of a rejection. Finally an unfavourable probability together with high confidence will lead to final rejection anyhow. This already should illustrate that forces that influence confidence can lead to structural biases against certain decisions, due to informational incompatibilities.

The evolution of information-based decision processes

There are two aspects that have to be considered when thinking about the evolution of decision processes as described above. Firstly, the development of the specific processes of prognoses, evaluation and decision. Secondly, the confidence associated the output of such a process. A new decision-process has to be developed whenever there is a substantial crisis of confidence in old processes or when totally new economic situations (e.g. a new technology) arise. In these situations exogenous expectations – animal spirits or schumpeterian characteristics – play a dominant role and have to be sufficiently high as they have to offset a total lack of experience with a trial process (still confidence additionally will be determined

according to information completeness and relevance with respect to the trial reference set). In the further evolution the importance of exogenous expectations results from anchoring. Succeeding adjustments of confidence will be governed by the starting point signified by exogenous expectations. As (and if) a process becomes more and more established, i.e. experience about that process rises, the residuum of exogenous expectations become less important.

The success of a process – and it should be recalled here that it is the relative positioning within an industry that defines success for most decision-makers – certainly will be influenced by the extent of its application. The more wide-spread a process is, the more likely management objectives will be reached. Certainly this will not be totally independent of the underlying economic forces, and processes that only lead to disappointed expectations will not survive the early stages of their application. It is unquestionable as well that processes that lead to the most successful results in the early stage of their application are most likely to survive. Nonetheless this does not necessarily imply that the surviving processes are the most efficient ones.

Furthermore power-relations will play an important role within this evolution, as larger organisations have a considerable – though not absolute – discretion in convention-setting, being able to determine not only the behaviour of their members directly via rules, but that of other stakeholders indirectly as well. This and random events will govern the rise and specification of a new regime of conventions that will be adopted interdependently by more and more decision-makers as (and if) they turn out to be relatively stable, and in turn they will become more and more stable as more decision-makers choose to apply them. The rules and conventions developed will be based on an engagement of specific evidential information to specific decisions. The development, continuos evaluation and employment, as well as the associated information-processing, will cause decreasing costs to scale and therefore they are more likely applied in larger organisations and in organisations with a separation of management and control, having a specific utility there, which justifies higher costs. Therefore though conventions will influence routines and behaviour in each entity of an economy, their implementation and formalisation will reach different degrees, being influenced by the specific characteristics of an enterprise.

As it has been argued above, that usually aspects like animal spirits and schumpeterian behaviour play a subordinate role in modern organisations, there is a need to motivate these exogenous aspects in the early stage of convention creation separately. In fact the timely constancy and the occasional destruction of conventions is the visible consequence of an

evolutionary process, which is influenced by a dialectical interplay of two characteristics, signifying human behaviour in capitalism under conditional uncertainty. On the one hand, a desire for a quiet life and the "relativity" of economic success in a capitalist economy explains the propensity of humans to impose order to an otherwise open system trough the use of conventions. On the other hand, besides occasional random radical innovations it is the very relativity of success together with relative power-hierarchies that is capable to induce the destruction of existing conventions. A long phase of conditional stability in conventions will only be reached when there is some conventionally stable distribution of profits and output and the longer conventions are stable, the more predictable the behaviour of other market participants becomes. As there exist relative power-hierarchies, also in respect to discretionary convention-setting powers, this may induce confidence into some (usually the more powerful) decision makers that they are able to change the existing distribution in their own favour and that they can extend their power-base (which once again is not necessarily a contradiction to the management objectives as outlined above) by surprising other market participants via the use of unconventional behaviour.

Information-based decision processes and credit rationing

The endogenous money supply and the fringe of unsatisfied borrowers

A major aspect of Post Keynesian monetary theory, that therefore has to be considered when discussing credit rationing from a Post Keynesian perspective, is the assumption of an endogenous money supply. Though there seems to be consensus insofar that the money supply is credit and at least to a large extent demand determined, differing schools have emerged– the most prominent being Horizontalism and Structuralism (or liquidity preference school respectively) – and there has not been a final argument reconciling the differing approaches yet. However, having led a deep and interesting debate over more than the last decade, the schools have moved thus far that the remaining differences mainly seem to be rooted in the question, whether structuralism is a special case of Horizontalism or vice versa (Rochon 2001). As this question can not be solved here for the further discussion a horizontalist position will be adopted.[2]

Perhaps the most elaborated formalisation of the horizontalist position has been done by Basil J. Moore (1988) and (1989). For Moore – as for other Horizontalists - commercial banks create money upon demand for credit irrespective of their reserves. It is not reserves that make deposits but loans make deposits. Any loan that is provided by a bank immediately

accounts for a deposit that necessarily stays within the (whole) banking system and is freely exchangeable among banks and non-bank economic units over bank wholesale markets. Reserves are ordinarily supplied endogenously on demand and central banks usually accompany changes in reserve requirements by increased open-market activity in their role as lender of last resort.[3] It is not the money supply therefore that is "fixed" by central banks, but the short-term interest rate is exogenously pegged. Banks then administer their lending and deposit rates via mark-ups and mark-downs respectively around the wholesale rates. The money supply can be represented by a horizontal supply curve at the interest rate, at which banks are quantity takers accepting all deposits and all requests for credit as long as their collateral and risk requirements are met. Therefore though money and credit are essentially demand determined, not everybody actually applying for credit effectively obtains a loan, as banks only grant credit to customers deemed creditworthy by them (Wolfson 1996, Rochon 1999).

Having introduced Horizontalism, the question remaining is what role credit restrictions or credit rationing respectively play within this process and if they may be aggravated structurally, due to specific conventional decision processes and informational requirements. In fact both schools have acknowledged that though credit is (largely) demand driven, there still remains a "fringe of unsatisfied borrowers" not judged as creditworthy by banks from the horizontalist position (Wolfson 1996), probably rationed form the structuralist viewpoint (Monvoisin and Pastoret 2003). But can this process lead to structural suppression of credit, caused by the characteristics of certain groups, apart from their respective profit prospects and risk exposure? Before the attempt to investigate this question further is done in the succeeding section, there should be clarification about the usage of the term credit rationing. There is a broad spectrum of definitions thus far ranging from "... (a) among loan applicants who appear to be identical some receive a loan and others do not, and the rejected applicants would not receive a loan even if they offered to pay a higher interest rate; or (b) there are identifiable groups of individuals in the population who with a given supply of credit, are unable to obtain loans at any interest rate, even though with a larger supply of credit, they would." (Stiglitz and Weiss 1981, p.394f.) to "[c]redit rationing here refers to any situation in which the bank refuses to lend to a particular borrower, despite the borrower's willingness to pay a higher interest rate" (Wolfson 1996, p.463). The term credit rationing as used in the succeeding section to analyse possible structural discrimination effects of information-based decision

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[2] This is done because the possible impacts of incompatible information seem to become clearest when studying them it in a horizontalist model. It is not, whatsoever indicated as a normative statement.

processes is somewhere in between and shall be reserved to situations in which a credit is not granted to a certain borrower, though it would have been granted with different or more information about the same underlying factors, that can not be provided by the specific applicant for some reason.

Incompatible information and structurally restricted access to credit

As argued in the preceding section, there are many reasons to employ strong information-decision linkages within specific organisations, reducing subjective uncertainty for decision-makers. The extent and sophistication of these processes will depend upon the specific size, form and ownership-situation of these organisations. The stronger the principal-agent-problem and the more important therefore the need to direct, control and sanction agents, the more developed these processes. This makes their development and specification on a high level more likely in larger firms, due to principal-agent problems within the internal organisation, and in firms where there is a separation of ownership and control, due to the principal-agent problems between owners and management that justify higher costs of more sophisticated information-based decision processes. On the side of the banking industry the concentration and fusion process of the 80ies and 90ies has left the largest banking corporations with an ever bigger market share (Huffschmid 2002). Additionally the ongoing implementation of the Basel II accord requires banks to underlie credits according to clearly defined risk groups – as derived form external or approved standardised bank-internal rating procedures – with equity.[4] These factors and the typical ownership situation of banks leaves enough evidence to assume, that it has come to ever more stringent and standardised rules within banks and for the credit risk evaluation process. So though as there is no "true" probability distribution waiting to be discovered out there in situations of uncertainty (Crotty 1994), the bank has to make a decision on a loan request and will do so trough a highly standardised procedural estimate.

As the informational systems of potential borrowers will be developed to different extents, the informational requirements of banks' credit risk evaluation process will influence the ability of firms to communicate with banks and therefore their access to credit. In other words the ability of a credit applicant to make a bank "understand" the prospects and profit perspectives of a project will depend on the output of her own informational system and crucially on the

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[3] The question if central banks really proceed like that –besides the role played by liquidity preference of banks and the general public - is one of the main differences between horizontalist and structuralist thought.

[4] This is not a contradiction to the horizontalist position as the increased use of securtization of credits (Allen and Santomero 1998) allows banks to manage the risk composition of their credit portfolio – in accordance with Basel II – over capital markets and therefore to lower their equity requirements when necessary.

framing of that information. The more similar the requirements of a certain firm to that of banks are, the easier and therefore cheaper it will be to "translate" the original informational output, upon which the internal decision to undertake an investment project has been founded, into a form acceptable for a bank clerk (as delegated decision-maker).

Certainly, as there will be decreasing costs to scale of information-generating processes, size will play a considerable role here as well and the larger a firm the more sophisticated its informational output will be and the easier its adaptation. Nonetheless, to illustrate the pure effects that can arise out of incompatible informational systems, assume for instance two firms of the same medium size and – as this will be important for the banks lending decision as well – having the same overall financial condition, both wanting to undertake identical investment projects for which external finance is necessary and both being new to the bank, so there has not been the possibility to establish a reputation as good borrower thus far. Certainly asymmetric expectations can lead to a rejection of both lenders (as shown in Wolfson 1996) but differences in informational systems may lead to the rejection of one potential lender while the other one is accepted. If for instance, one firm is owner-led while the other one is a corporation with delegated managers the resulting informational systems can and will be entirely different. For the reasons mentioned above under uncertainty, a corporation is more likely to employ (highly formalised) information-based decision processes and the relations within a corporation will be more bureaucratised.

An owner-led company on the other hand will be stronger dominated by personal relationships within the decision process and the final investment decision may rather depend upon the animal spirits of its owner, than on a close relation to any underlying information. As an owner has to bear the full consequences of the firm's faith and is not able to rely on the subjective uncertainty reducing effects of relative performance measurement in the same way as delegates, one of the major motivations to use information-based decision processes – namely the implementation of widespread conventions and routines – will be entirely lost. This is not to claim that decisions in an owner-led company are not founded on any information at all or that their decisions are necessarily "worse" with regard to the outcome than those undertaken in a more bureaucratised environment[5], but there will be far less standardisation and informational systems will be less sophisticated than in a business where the principal-agent argument is stronger. Decision hierarchies will be founded on personal-loyalty relationships instead of interchangeable bureaucratised behaviour. The proportion of some kind of animal spirits (in other words the proportion of exogenous expectations) within

the decision making process may be considerably higher and due to a structural difficulty in formalising such "soft" factors as intuition and personal experience, the informational outset on which the investment decision of the owner-led enterprise is founded may not be sufficient for the credit risk evaluation process of a bank, that will require hard data as a result of size, ownership situation and legal requirements. Considerable cost associated with the generation of bank-required information – especially as information generating processes would have to be installed for one single project, while applied to all decisions in other firms – therefore can make a project unprofitable for an owner-led enterprise, while it still would be a stay profitable for a concurring firm with a different ownership-situation.

A simplified graphical illustration

The starting point is an adaptation of Moore's horizontal model of bank intermediation (for graphical purposes notations of money supply and interest rates on the coordinate axes have
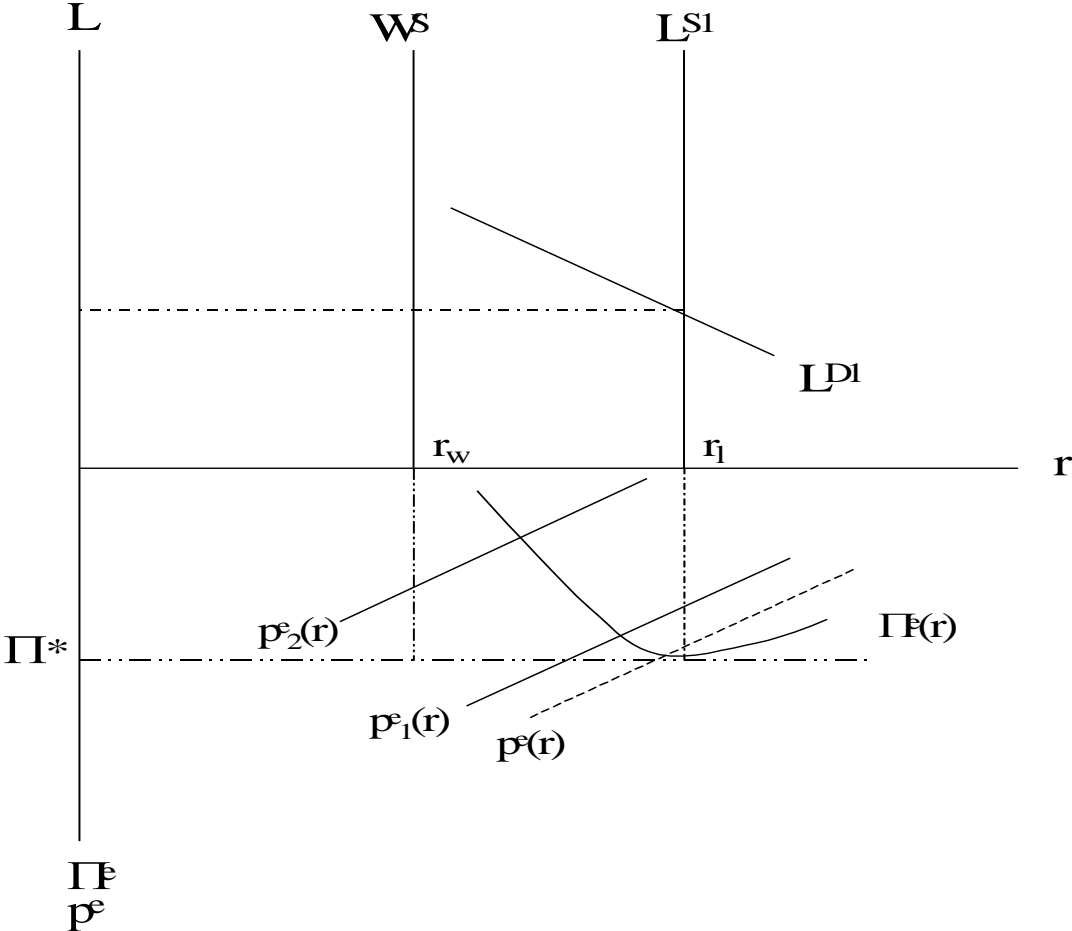

Figure 1: Effects of application costs

[5] In fact it is possible, that strongly bureaucratised and convention-bound behaviour seriously hampers innovation and the exploration of new paths.

been changed leading to the money supply function being displayed vertically) where the central bank determines the interest rate on the wholesale markets r_w leading to a wholesale supply function W^s. Banks then set their lending rates r_l for specific predefined risk groups of borrowers, classified according to financial ratios and project prospects to which potential borrowers have to be assigned, leading to credit supply function L^{s1} for the observed risk group. Hereby "[t]he rates set on loans must be administered so that the expected risk-adjusted marginal revenue from loans is equal to the average return expected on marketable securities." (Moore 1989, p.18). To do this, banks will estimate a profit function $\Pi^e(r)$ for the business with a particular group. As with excessive interest rates – depending upon the extent of competition and power-relations – potential borrowers will be bid away by competitors or will not apply at all the profit function will be a concave function of the interest rate. The optimal interest rate for a specific risk group of borrowers for the bank will be fixed at the point where optimum profit rates are expected, Π^* in this case, which will govern the interest rate on loans r_l.

The expected profit function $p^e(r)$ for the investment project described above for both firms (though caused by different sources of expectation) here is assumed to be identical and given profit-expectations is a negative function of the interest rate. Nonetheless as communication with banks can and will be costly, profit expectations have to be adjusted for application costs including all expenditures that have to be made until a bank finally accepts a credit petition. The quoted corporation facing similar principal-agent problems as the bank will have informational outputs that will be cheaply adjustable to the requirements of banks credit risk evaluation processes, leading only to a slight shift of the expected profit function to the left $p^e_1(r)$. The owner-led firm on the other hand may only have accounting systems sufficient to fit legal requirements and lacking any estimation of financial flows that might be required by the bank. There might be a considerable lack of information that leads to a postponement of the decision at the bank due to low confidence and substitution of this information might cause significant costs (e.g. consulting costs, costs of legal adviser, research costs...). This may cause a significant shift of the profit expectations function to $p^e_2(r)$ when adjusted for full application costs so as illustrated above application costs suppress profit expectations thus strongly that certain groups of borrowers may have significantly hampered access to credit.

Conclusion

This paper presented a possible Post Keynesian approach to decisional behaviour under uncertainty and a resulting form of credit rationing that is capable to account for structural

difficulties of certain groups of applicants to obtain credit. Conventional procedures and information-based decision processes will be developed under conditional uncertainty, which can differ remarkably between specific groups of market participants. Hereby factors reducing subjective uncertainty – that exist to a different extent for different decision-makers – can help to understand human decision making under uncertainty. Differences in informational systems, arising out of this different exposure to uncertainty, can lead to a structural inability of participants to communicate and therefore to proceed business with each other.

For the credit market similar organisational characteristics of banks as well as increased regulation in favour of highly formalised credit risk evaluation criteria indicate that informational requirements for credit applicants have reached a considerable standardisation over the banking sector resulting in low competition of banks for borrowers with informational structure that is significantly different to that of the banking sector. As SMEs and unquoted firms will typically have a far less standardised and formalised informational outset than banks this can structurally increase credit costs for them or even hinder them to obtain any credit at all. At the same time those applicants that have similar characteristics as banks, typically bigger and quoted enterprises and that therefore can transmute their information more easily into a form acceptable to banks, will obtain credit relatively easier and cheaper giving them competitive advantages. This is consistent with recent empirical findings of Wagenvoort (2003) who, based on an analysis of cash-flow-growth of firms of different sizes over the period from 1996 to 2000, states that "...SMEs indeed encountered finance constraints (...) However, within each size class, quoted firms – even when small – tend to suffer less from finance constraints than unquoted firms." (Wagenvoort 2003, p.22). Further empirical research, giving a deeper insight into the role that external finance constraints play for SMEs might be interesting.

Certainly differences in informational systems will not be the only source for a restricted access to credit and especially for unquoted enterprises other aspects such as a lack of additional monitoring trough the capital market (potentially lowering monitoring costs on the side of banks) may be additional sources of explanation. Notwithstanding, being characterised by a different risk exposure and usually a different time-horizon than those of banks and furthermore being often subject to violent waves of speculation, stock markets can not always be taken as a reliable indicator for a the quality of the managements the growth prospects of a firm and banks will now that. Incompatible informational systems therefore may contribute to an explanation for finance constraints of SMEs and unquoted firms. A specialised agency

offering "communicational services" between banks and SMEs might be a possible policy implication.

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