

CHAPTER THREE

Children's understanding of economics

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INTRODUCTION: THE MEANING OF "ECONOMICS"

Economics is often used as a label for that part of the social world concerned with the acquisition, management, and distribution of assets (e.g., buying, borrowing, bargaining, banking), and for the most part this convenient approach is taken here. But it is inevitable, given that the concept of economic behaviour is culturally and historically determined, that the boundary between the economic and the noneconomic is poorly defined and rather arbitrary. Hence in this book children's understanding of social class and occupations is dealt with in another chapter (Emler & Dickinson), though aspects of this topic are clearly part of economic understanding. Agonising over definitions has never seemed to me a useful activity, but being clear about what we mean by "economics" does matter: It is important not to fall into the trap, for example, of thinking that economic behaviour must involve money. Historically, plenty of economic systems have managed without money and in the modern world there are still many areas of economic activity that are not monetised (the most notable example being the domestic sphere). What this suggests is that in considering children's understanding of economics we should not only be concerned with the cash economy but also need to consider their understanding of swapping, doing chores, and gift-giving.

So my aim in this chapter is to provide a definitive (but not exhaustive) overview of children's understanding of economics broadly conceived.

44 ECONOMICS

There will be a particular emphasis on the child's understanding of his or her own economic behaviour, as previous reviews (e.g., Berti & Bombi, 1988; Cram & Ng, 1999; Furnham, 1996) have concentrated almost entirely on children's understanding of the adult economy. There will also be a focus on the relative impact of indirect sources and direct experience on economic understanding and on variations in economic understanding within and across cultures.

CHILDREN'S UNDERSTANDING OF ECONOMIC CONCEPTS

There is a very substantial literature in this area. Nearly all studies are based within a cognitive interpretation of development that assumes universal stages that children have to go through in order to achieve an adult understanding of economic concepts. This is often explicitly Piagetian, though not in the earlier or more recent studies. The number of stages identified, and the detailed content, varies from concept to concept and from author to author, though there are rarely fewer than four stages or more than nine. A subsidiary theme is concerned with identifying differences in children's conceptions that can be related to the social environment.

Children's understanding of money and its origins

Children's understanding of money has been under investigation for at least 50 years. In what is probably the earliest study, Strauss and Schuessler interviewed 141 children from two social classes and from the ages of 4½ to 11½ about the meaning of money and its origins (Schuessler & Strauss, 1950; Strauss, 1952; Strauss & Schuessler, 1951). The children were each interviewed on four separate occasions, which enabled Strauss (1952) to identify nine stages through which children progress in their understanding of monetary meaning. Before the first stage (what one could label stage 0), Strauss reports that children (aged 3–4½) can distinguish between money and other objects, but can't distinguish between different coins. Their handling of coins is playful and they are only vaguely aware that money is somehow connected with buying. In stage 1, children have a notion that money can somehow buy certain commodities ("Spend it. That's what money is for") but think that any coin can buy anything. At stage 2, they recognise that some coins are more valuable than others, but believe that one must tender the exact coin—so a nickel can buy a 5-cent item but not a 2-cent item. Nonetheless, they assume that a shopkeeper always gives money back as part of the transaction. As children move through the higher stages their understanding becomes more sophisticated. So at stage 4 there

is a recognition that customers have to pay the shopkeeper for goods bought in order for the shopkeeper to earn money and, by stage 9, children fully understand the notion of profit. What is missing at all stages is an understanding of the role of middlemen (wholesalers, distributors, etc.). The children were asked if it made any sense for the manufacturer to sell his goods to one person, who sold them to another, who in turn sold them to the shopkeeper. Only two children in the whole sample thought this might just make sense (the others refused to entertain the possibility), and even they believed it did not happen very often. This lack of understanding of the role of middlemen is probably a consequence of the age range of the sample, as it is evident in subsequent research that the understanding of complicated economic issues continues to develop throughout adolescence (e.g., Jahoda, 1981). It is worth noting that Strauss and Schuessler (1951) report no class or sex differences.

Berti and Bombi (1979, 1981, 1988) built on Strauss and Schuessler's work and elaborated it in two important ways. First, they explored the understanding of a younger age group, and interviewed children aged 3 to 8 about the use of money in buying and selling. Second, they investigated children's ideas about the sources of money. So as to provide a concrete starting point, Berti and Bombi used a procedure in which coins and bank notes were introduced into the interview, along with such items as sweets and comics. For the use of money in buying and selling, they identified five levels of responses (and a stage 0, in which there was almost a complete absence of knowledge about money). At stage 1, children recognise that money is used when one buys something, but do not differentiate between different notes and coins (as Strauss also found). At stage 2 children realise that not all kinds of money will buy everything, though this understanding is very broad. So a child distinguishes between coins and notes and believes that the latter would have to be used to buy higher-value items. At stage 3 children know that sometimes the money is not enough. Money cannot be used when "it is too little". What marks this stage out from stage 2 is the use of quantitative criteria. So Leo (age 5), for instance, knows that he can buy more with a 100,000 lire note than a 10,000 lire note "because there are more numbers". Stage 4 is characterised by the notion that to buy something the exact money is necessary (as in Strauss' stage 2). Berti and Bombi point out that, for some children, the idea that one must pay with the exact money alternates during the interview with the idea that one could pay more and get change, but for children at this stage the exact money notion dominates. Finally, at stage 5, children understand that change precisely compensates for any difference in value between the money tendered and the price of the goods bought.

This work goes beyond that of Strauss in interesting ways. By studying younger children, Berti and Bombi were able to see the first emergence of

46 ECONOMICS

economic ideas. Even those children at stage 0 knew that money was somehow linked to buying, and what one can see is the gradual shift from an understanding of buying and selling as a ritual or custom to an understanding based on the relationship between money and goods. Berti and Bombi's results also give a more satisfactory picture of what happens in the early stages of the understanding of money. By interviewing the same children again a year later, they were able to confirm that the idea of being able to pay only with the exact money is an advance on the notion of being able to pay with money of a higher value. Almost all the children who had held the former view had moved on to a correct understanding a year later, whereas some of those holding the latter view had shifted, a year on, to believe that the exact sum of money was necessary.

Berti and Bombi's findings about children's ideas of the source of money are also instructive. Four categories emerged from their analysis. At level 1 (4–5 years) children had no idea of the origin of money, whilst at level 2 children saw the origin of money as independent from work; for example, the bank gives it to anyone who asks for it. At level 3, the subjects thought that the change given by shopkeepers after having bought an item was the origin of money. At level 4 (7–8 years) children associate money with work and indeed assert that money comes only from working.

The studies of Strauss and Schuessler, and Berti and Bombi, are clearly within a cognitive developmental tradition, in that their results show a progressive sequence of stages that children move through in achieving an adult understanding of money. More recent work on children's understanding of money carried out in the Czech Republic and Portugal (Morgado & Vyskocilova, 2000) and South Africa (Bonn & Webley, 2000) has placed more emphasis on the importance of the social context, and consequently has stressed differences within samples rather than uniformity of development.

The purpose of Bonn and Webley's study, for example, was to investigate children's economic understanding in a society where there are enormous and entrenched differences in wealth based on racial grounds and where, in the past, social mobility for the poorer groups has been extremely limited. Three locations (rural, urban, semi-urban) were chosen because they provided very different social environments in which the children were gathering their "economic knowledge" about the world: Rural areas are generally extremely poor with high levels of unemployment, and such employment as there is involves migrant work; urban areas are also poor but with a greater range in the types of jobs available; and semi-urban areas are the most affluent. Over 200 children aged 7, 9, 11, and 14 years were interviewed individually in Setswana (their mother tongue) and asked, among other things, where money comes from. The answers to this question fell into clearly defined categories (Whites, God, people in general, the

government, factory or mine) and tended to be brief and concrete. There were few references overall to the link between work and money. Many of the answers had a distinct South African flavour, with references being made to Nelson Mandela, the Whites, and the origins of money in the mines, the latter being a more common response among the rural children (e.g., "They dig it up, as they dig, stones of gold come out and they make money out of it"). The urban sample gave the least sophisticated answers: They notably favoured the explanations "the bank" and "God" and gave the fewest answers that referred to the government and payment. Developmental trends were not that clear, but personal references ("God", people) dropped with age and the idea that money is man-made (in a factory or in a mine) increased.

Rather than a within-country comparison, Morgado and Vyskocilova compared children from the Czech Republic (Prague) and Portugal (Coimbra). Seventy-five children from each location, with ages ranging from 7½ to 9½ years, were asked questions about the function and circulation of money. The results are quite complex, but Morgado and Vyskocilova conclude that the Czech children have a higher level of understanding than the Portuguese children do with regards to the circulation of money and goods. They also have a better knowledge of prices, but this may reflect the fact that there is still a degree of price control in the Czech Republic, whereas Portugal has a more liberal market economy. Far fewer Czech children receive regular pocket money and most believe that their father's money comes from the state (and not from his boss or manager), which again probably reflects the relatively recent transition to a market economy.

What these studies tell us is that, although there are some differences between and within countries in children's understanding of money, these are probably far less important than age differences. Morgado and Vyskocilova, for example, report quite marked developmental changes even over the relatively narrow age range that they investigated. But I suspect that some of the consistency in the findings is the result of researchers focusing on the development of the understanding of the adult use of money and the role money plays in the economy. Treating money in a broader context and asking different questions would probably be more revealing. In previous studies, children have been asked questions such as "where does money come from?", "which coin (offering a selection) will buy more?" and "If I went into a shop with this money, could I buy chocolate?". Asking children about the source of their money and why their parents give them money in the way they do might be more revealing. This might shed some light on children's understanding of the links between power and money and the tension between independence and control.

Prices, supply and demand, profits, and naïve economics

The exchange of goods, whether by bartering or, more usually, by buying and selling, is a central economic activity. But these transactions, and the wider system of which they are a part, are not easy for children to understand. A clear picture of the development of some of the basic concepts can be seen in the work of Berti and Bombi (1988) and that of Burris (1983). Burris investigated children's understanding of basic economic concepts (commodity, value, exchange) by interviewing children aged 4–5, 7–8, and 10–12. To explore their understanding of price and value they were presented with pairs of objects and asked which would cost more and why. The youngest children think that the price of a good depends upon its characteristics, especially its physical characteristics. A diamond does not cost much “because it is so tiny”, while a book costs more than a wristwatch because “it is bigger”. Similar reasoning is evident in this exchange, reported by Berti and Bombi (1988): “Which costs more, this lettuce or the chicken?”—“*The lettuce, because there is more of it*”—“And what if I only bought this much (removing a part of the lettuce), would I have spent more on the lettuce or the chicken?”—“*The chicken*”—“Why?”—“*because there is more of it* (he checks and sees that this is not so) *no, no, still the lettuce because there is still more of it than the chicken*”. The older children (7–8) see the value (and so the price) of an object mainly in terms of its usefulness or function. So a wristwatch costs more than a book “because you can tell the time with a watch, but a book you can just read”. The oldest children shift to seeing value and price as determined by the work and materials put in, a point of view expressed very succinctly by one of Berti and Bombi's 10-year-olds “Things which people work on more cost more”. Very similar findings, using a rather different method, are reported by Fox and Kehret-Ward (1990). They explored conceptions of price from pre-school to adulthood by presenting people with a story about a group of friends who open a bicycle shop and need to set a price for each bicycle. The friends all have different ideas about how the bicycle should be priced: One believes that price should be based on size, another on the amount of work that went into making them, and so on. The participants are asked whether they thought each pricing scheme was a good one and why. This confirms and extends Burris' and Berti and Bombi's findings: Pre-school children thought price should be based on size, and 10-year-olds also favoured pricing by feature but recognised that the amount of work that was put in was also important. Thirteen-year-olds saw price as a function of work put in and customer preferences, with adults expressing similar views but adding ideas about supply and demand.

So young children see buying and selling as a physical act, and value (and prices) as determined by the properties of goods rather than by supply

and demand. From the work of Furth (1980), Jahoda (1979), Leiser, Sevón, and Lévy (1990), and others, it is clear that children between roughly the ages of 8 and 11 have a concrete understanding of separate exchanges (e.g., between shopkeeper and buyer, between shopkeeper and factory) but do not have an integrated picture of the economic system as a whole until early adolescence. But this work tells us that children come to understand the need for the shopkeeper (and the factory owner) to make a profit, not how they come to understand pricing itself. For this we must turn to the recent work of Siegler and Thompson (1998; Thompson & Siegler, 2000).

Thompson and Siegler characterise previous work as producing “domain-general” stage theories of children’s understanding of economics and point out that recent work on conceptual development has emphasised “domain-specific” knowledge. In these informal or naïve theories, understanding of domain-specific concepts is seen as crucial. Price—determined by supply and demand—is a clear instance of a theory specific to economics. So it is no surprise that Siegler and Thompson (1998) should investigate 4- to 10-year-olds’ reasoning about how sales would be affected by a number of variables (supply and demand, motivation and morality of the salesperson, changes in packaging).

Siegler and Thompson carried out three experiments. In each, children were presented with stories about lemonade stands. For example, in the first experiment, the story designed to look at demand went as follows “One day it was a holiday and a lot of people were out of town, so not as many people as usual walked down Kathy’s street. Do you think Kathy sold more, or the same, or less cups of lemonade than she usually did?” The supply story was equally straightforward: “Usually John’s lemonade stand was the only one on the block. But one day, both kids who lived next door to John decided to run lemonade stands too. Do you think John sold more, or the same, or less?” The results of this experiment showed that by age 4 or 5 most children understand the effect of demand on sales. By age 8 they understand the impact of supply but many of the oldest (10-year-old) children did not understand the impact of motivation and morality. This was consistent with Siegler and Thompson’s expectations: Demand should be the earliest variable understood as it directly causes change, does have an impact, and the impact is positive (whereas change in supply is inversely related to sales). In the second experiment, the children were presented with motivation, morality, and cup-colour stories but in this case the impact on sales was given and they had to explain why the effects (or noneffects) occurred. This showed that children were better at explaining why something had an effect than why it had no effect. In the final experiment, children were presented with stories and one of three different types of explanations. This more subtle way of revealing implicit conceptual knowledge worked well, and showed that the 8-year-old children did indeed have

50 ECONOMICS

a good understanding of how motivation and morality can affect sales. Overall, these experiments show that economic understanding improves dramatically between ages 4 and 10, in this case mainly because of increased ability to understand indirect as well as direct causal paths, though increased experience with the economic system is probably also important.

In a second study, Thompson and Siegler (2000) looked at children's understanding of four core economic concepts: Profit seeking, competition between sellers, acquisition of desired goods, and economising (spending as little money as possible on purchases). Again, similar stories about lemonade stands were used, but in this case children's explanations were probed more deeply. Understanding of these four concepts cohered closely. The youngest children (age 6) understood that people want to acquire desired products, which derives from their general understanding of psychology, but rarely showed any understanding of the three more specifically economic concepts. But there was a marked change between 6 and 8 years, with the majority of the older children understanding all four concepts and a further gradual improvement up to age 10. Thompson and Siegler maintain that the marked improvement is probably the result of an increased ability to take unfamiliar perspectives and to understand the idea of inversely proportional relations.

This work gives an insight into how these same economic concepts are interwoven into an informal theory of economics and suggests that children have a qualitatively different informal theory of economics from age 8–9 onwards. This is congruent with recent work on children's saving (Otto & Webley, 2001), which will be considered below. Studies of children's understanding of another key economic concept (profit) suggest that there is a further qualitative change at 11–12 years. To understand profit, a child has to understand the linkages between buying (at a lower price) and selling (at a higher price) (Berti, 1992; Berti, Bombi, & De Beni, 1986; Jahoda, 1979). Jahoda investigated this with two studies of 6- to 12-year-olds' understanding of buying and selling, one consisting of a role-play, the other using a semistructured interview. The role-play involved a mock shop, with the child in the role of the shopkeeper. There was a range of simply priced goods available and, at a crucial point in the proceedings, a customer bought up all the supplies of a good, so that the shopkeeper had to phone the supplier, order fresh stock, and then pay for it. The role-play showed that only 1 of the 17 children aged 9–10 years who took part understood the idea of profit (indicated by the selling price being set higher than the buying price). By age 11–12, two thirds of the children understood profit or were at a transitional stage. The interview study showed that children's understanding progressed from having no grasp of the notion, to understanding two unconnected systems (the shop–customer relationship and the shop–supplier relationship), to an integrated system at around age 11–12 years.

Berti et al. (1986) tried to provide critical training to change children's understanding of profit, in order to pinpoint what must be acquired in order to master this concept. They used two different kinds of training procedures, based on the two main kinds of experience that children will have: First that of receiving information, second that of discovering the contradictions in their own ideas. Both training procedures led to some improvement in understanding, but whilst statistically significant, the improvement was not dramatic. Berti et al. report that some children were not able to compare earnings and expenses (the very simple arithmetical calculation being beyond them) and that this hindered the acquisition of the notion of profit. Berti and De Beni (1988) showed, with a study of children aged 7–9, that there was a very strong association between children's understanding of shop profit and their ability to compare costs and income. The latter ability—according to Berti and De Beni—is probably a prerequisite for the acquisition of the notion of shop profit.

Whilst the overall picture that this research paints is fairly clear, there are some interesting variations in economic understanding that result from different types of experience. Furnham and Cleare (1988), for example, studied conceptions of economics in what has been the least-studied age group (11- to 16-year-olds). They showed that the understanding of profit continued to improve over this age range and that profit in shops and factories was understood differently. Whilst only 11% of the 11- to 12-year-olds understood profit in shops, 69% mentioned profit as a motive for starting factories. This difference probably results from profit from trading being a harder concept to grasp than profit from making. Jahoda (1983) replicated his 1979 study with Zimbabwean children, and showed that they acquired the concept of profit earlier than British children. The reason for this is that they have direct hands-on experience of trading: They are not just observers of the market but participants in it. The idea that particular kinds of experience are important is confirmed by the work of Nakhaie (1993). Nakhaie found that the mother's level of education and how often she teaches her child about the economy (money, shops, bank, etc.) at home were the best predictors of Canadian children's (age 6–11) understanding of profit. Thirty per cent of the 10- to 11-years-olds in this sample understood shop profit, which is broadly in line with the other studies discussed. Finally, Fenko (2000) was concerned with the impact of the transition to a market economy on economic socialisation. As she points out, one of the most important changes in Russia has been a shift in the role and significance of money. In the Soviet Union, money was not an important medium of exchange (in a country where there are chronic shortages of goods, bartering takes on a special role), nor was it a clear indicator of status (one's place in the bureaucratic hierarchy was more important). She studied the understanding of a variety of economic concepts (including

52 ECONOMICS

profit) among Russian 11- and 14-year-olds and adults. What was striking was that the adolescents had a better understanding of profit than the adults—so only a minority of adults, for example, recognised that it is the aim of a businessman to make a profit on his enterprise. This clearly illustrates the crucial role played by the social context: Growing up in a centrally planned economy does not provide the experience required to understand concepts that underpin the functioning of the market.

Banks

Understanding economics is not just about mastering abstract concepts like prices, supply and demand, and profit. It is also essential to understand institutions such as banks and the government, and the role that they play in the economy. There is, in fact, a substantial literature on children's understanding of banks and banking or, to be more exact, the nature of a bank and bank profit (Berti, 1999; Berti & Bombi, 1988; Berti & Monaci, 1998; Bonn & Webley, 2000; Jahoda, 1981; Ng, 1983, 1985; Takahashi & Hatano, 1994; Wong, 1989).

The basic pattern is that children's understanding of bank profit develops from no knowledge of interest, to understanding interest on deposits, to believing that deposit interest is higher than loan interest, to believing that the interest is the same, to finally recognising that interest is higher on loans and consequently that is how banks make profits (Jahoda, 1981). At the first stage, the bank is seen as a place where money is stored safely ("It locks it up in a safe in case anybody breaks in") and children believe that you get literally the same money back as you put in. At the second stage, children are familiar with the term interest, know that a depositor gets more money back than they put in, but don't really understand why. In Jahoda's study most 11-year-olds were at either the first or second stage. When children first recognise that interest is due both on deposits and loans, they believe that deposit interest is higher and seem reluctant to concede that borrowers must pay interest ("because you've had their money for so long you really have to give them interest"). When they say that loan interest is equal to deposit interest, children are struggling with the notion that banks must make a profit—but do not understand how. Most 15-year-olds in Jahoda's study were at one of these stages. Finally there is a correct understanding of bank profit, but it should be noted that only 18 of Jahoda's 96 participants were at this level.

Subsequent studies have dealt with two interesting issues. First, researchers have considered what processes might be involved in initiating changes in economic thinking. Piagetians have stressed the importance of equilibration (Jahoda, 1984), the working out of a balance between children's understanding of the world and the world they observe.

Understanding depends partly on past experience and partly on a response to a new event: Such a response may be a search for logical consistency, which may then result in an improved level of understanding. In order to investigate equilibration, Jahoda (1981) induced cognitive conflict by asking children to explain how banks managed to pay their employees. If a child believed that deposit and loan interest were equal, such a question creates a potential conflict with their initial beliefs. Inducing cognitive conflict had a marked effect on children's understanding. Ng (1983) followed this up in a more systematic way and looked at the impact of both cognitive contrasts and cognitive conflict using a sample of Hong Kong adolescents. Contrasts were induced by presenting questions that did not involve banks (e.g., "A boy borrowed \$5 from a friend to pay back later. How much money would he pay back to his friend?"). The idea here was that children would reply \$5 (they all did) and then feel dissatisfied with the idea that borrowing money from the bank had the same level of obligation as borrowing from a friend. Ng found that only conflict (induced in the same way as Jahoda) significantly increased understanding. Most recently, Berti (1999; Berti & Monaci, 1998) has investigated whether the development of the understanding of banking involves accretion or restructuring. She concludes, from a series of intervention studies, that marked changes in understanding can be achieved using an appropriate curriculum (some of these were fairly substantial, involving 20 hours of lessons over a 2-month period). However, in her view, the restructuring of knowledge in this area should be regarded as the end product of incremental changes—a sequence of deleting certain rules and adding others—rather than a distinct process.

The second focus has been on cross-cultural differences in children's understanding of banks. Ng (1985) and Wong (1989) have both showed that Hong Kong children are more advanced in their understanding than their American and New Zealand counterparts. This is assumed to reflect the business ethos of Hong Kong. Takahashi and Hatano (1994), on the other hand, found that the understanding of Japanese children lagged behind both that of European and Hong Kong children. The most popular misconception in 11- to 16-year-olds in this study was that the bank was a kind of safe-deposit box. This lag in understanding was attributed to them being sheltered from economic activities. Bonn and Webley (2000) report that black South African children's conceptions were as unsophisticated as the Japanese children but argue that this reflects the impact of living in a society where economic activities are not generally flourishing. South African black children get little exposure to money, payment for work, banks, and the role of banking. There are also important within-society differences in this study, with rural children (the poorest group) having the weakest understanding. These kinds of within-society differences have been obscured in previous studies, which have based their findings on rather limited samples.

54 ECONOMICS

The largest body of cross-cultural data in this area is reported by Leiser et al. (1990). This study involved hundreds of children from 10 different countries. They found that their sample was split into three groups regarding the sophistication of their answers on banking. The most advanced children were the Danish and the Finnish; then came those from France, Poland, Israel, and West Germany; and the lower ones were Algeria, Yugoslavia, Norway, and Austria: This is a pattern of findings that, whilst intriguing, is impossible to interpret.

CHILDREN AS ECONOMIC AGENTS

The literature on children's understanding of economics has been overwhelmingly concerned with the understanding of the adult economic world (e.g., money, banks, unemployment)—and the legitimate economic world at that. I am not aware of any studies of children's understanding of aspects of the black economy or property crime considered as an economic act. But economic phenomena occur at home, at school, and in the playground and so children are surrounded by "economics" (although they may well not see a particular situation as economic). So whilst children may observe the functioning of the adult economy by going shopping with their parents, watching TV reports about unemployment, by reading, and by talking to teachers and others, they also participate in it and create their own autonomous economic world. Participation is through spending pocket money, and for older children, by part-time work and, in certain countries, as street traders. The autonomous economic world is the world of child-child economic relations, where possessions are swapped and the latest craze cards traded. Children's understanding of their own economic behaviour has been neglected—and is the focus of this section.

Pocket money—and other sources of money

Before children can participate in the adult economy through buying, they need to get hold of money. It is all too easy to assume that the usual arrangements in one's own country are standard throughout the Western world—but they are not. It is important to bear in mind that pocket money/allowances (in the sense of regular fixed payments) is not an established institution in all countries. It is, for example, uncommon in Italy and Greece. The way in which money is given to children by parents reflects ideas about upbringing and the proper relationship between parents and children. So it is vital that one looks at the literature on the sources of children's income, though information is available only from a very limited range of countries. Good-quality information is available from Britain (Furnham, 1999; Furnham & Thomas, 1984; Webley & Plaisier, 1998), France (Lassare, 1996), America (Miller & Yung, 1990; Mortimer, Dennehy, Lee, & Finch,

1994), and the Netherlands (De Zwart & Warnaar, 1997; Warnaar & Van Praag, 1997).

This research shows that in these four countries parents usually introduce pocket money or allowances when a child is aged between 5 and 8 years (the mean age preferred by British parents is 6½; Furnham, 2001). The amount of pocket money is linked to age. In the UK in 1996, 8- to 10-year-olds got on average £1.69 per week, whereas 11- to 13-year-olds received £2.73 for the same period (Waterson, 1998). In the USA, in 1997 a third of 9- to 11-year-olds received no allowance and the most common amount given was \$5. In the UK and France pocket money has, on average, gone up more than inflation over the last 25 years. French surveys give an indication of the extent to which different age groups rely on pocket money as a source of income. It makes up 100% of the income of French 4- to 7-year-olds but only 14% of the income of 13- to 14-year-olds, which is overall much more substantial. The rest is made up of payment for household chores (11%), part-time jobs (29%), and gifts (46%). In the UK, even for young children, pocket money is only one source of money. Webley and Plaisier (1998) identified three important sources of money for children aged from 5–12 years: Pocket money, holiday money, and birthday money. Holiday and birthday money were often quite substantial (up to £45 for holiday money and £75 for birthday money) and could make up a significant part of the child's annual income.

That children's income comes from a variety of forms matters, as money from different sources is used and thought about differently. Whilst parents tend to see pocket money as money for spending (Sonuga-Barke & Webley, 1993), quite a lot of pocket money is in fact saved. Amy (age 11) is typical "I get £2 every week . . . I pay for Guides (75p) and to go to club (45p). I save the rest of the money for Christmas and special occasions so I can buy presents". Holiday money is seen as spending money and is used for entertainment, souvenirs, and presents. As Mark (age 9) reported "My mum gave me £30. On holiday I kept this in my bedroom. If I wanted to buy something I went to the shops and bought all sorts of things. When I came home I had 1p left". Birthday money was used to buy clothes, shoes, and toys, with any money left afterwards being saved.

These different spending patterns are consistent with the idea that children, like adults, use mental accounts in thinking about their own economic activities. The term "mental accounts" was introduced by Thaler (1980, 1985, 1999). It is best understood through analogy with the behaviour of organisations. Thaler points out that most organisations have accounting systems within which there are a number of accounts. These enable spending decisions to be devolved to departments and activities to be monitored and controlled. Mental accounts function in the same way. There is a large body of evidence that adults use mental accounts (Thaler,

56 ECONOMICS

1999). For example, adults and 12-year-old children (but not younger children) are less willing to buy a replacement ticket if they have just lost one than they are to buy a ticket if they have lost an exactly equivalent sum of money (Tversky & Kahneman, 1981; Webley & Plaisier, 1998). The lost ticket may be seen as a loss from a mental leisure account (which is then depleted), whereas the lost money is from a mental general account, where the impact is far less.

From the perspective of parents, giving children pocket money plays an important part in developing budgeting and money-management skills (Furnham, 2001). And the evidence suggests that parents are right. Abramovitch, Freedman, and Pliner (1991), for example, studied how spending in an experimental shop was affected by children's experience of money. The children (aged 6, 8, and 10) were given money to spend in the experimental shop, either in the form of credit or cash. They could take home any money that they did not spend. Those children who received an allowance (pocket money) spent about the same amount whether they were given cash or credit, but those who did not receive an allowance spent far more when using credit.

Children's saving

A major economic problem that children (and adults, for that matter) face is adjusting the flow of their income to expenditure. Money rarely arrives in just the right amounts at just the right time. Saving is one solution to this problem, but it is important to recognise what this means. A child may spend £1.25 of the £2 pocket money she receives on Saturday and the remaining 75p on Thursday, when she goes to Guides. She may save all her pocket money for a month and then spend £8 on a computer game. Or she may save £1 a week all year to spend at Christmas. All of these involve saving, though in everyday life we might usually only use the term for the last of these patterns of behaviour. Whether something is defined as saving or not depends entirely on the accounting period we use.

As one might expect, saving does increase with age (Furnham & Thomas, 1984; Ward, Wackman, & Wartella, 1977). Older children report that they save because they have a generalised expectation that they will need money in the future. Younger children, in contrast, tend to have concrete targets, such as a game or toy. This increase in saving with age could simply be a matter of older children having higher incomes and having easier access to savings accounts. But it is more likely to be dependent on children's developing understanding of how to delay gratification, resist temptation (Sonuga-Barke & Webley, 1993), and of saving itself (Webley, Levine, & Lewis, 1991). If children are given a choice between a small immediate reward (5p now) and a larger delayed reward (10p in 5

minutes), younger children will tend to choose the immediate but smaller reward and older children will tend to wait for the bigger reward (Mischel & Metzner, 1962). This improvement in the ability to delay gratification seems to depend partly on a better comprehension of the situation and understanding helpful strategies (Mischel & Mischel, 1962; Peake, Hebl, & Mischel, 2002). These strategies include distracting oneself with another task, focusing on things other than the reward, and hiding the reward. Experiments into delay of gratification test children's ability to wait, rather than their ability to save, though clearly self-control is important in each. But in longer-term saving a child has to make a whole series of decisions (to add to savings, to withdraw) over time.

The series of studies of children's saving carried out by Webley and his colleagues (Webley, Levine, & Lewis, 1993; Sonuga-Barke & Webley, 1993; Otto & Webley, 2001) suggest that a number of processes are involved in the development of children's understanding of saving and their saving behaviour. Three of their studies involved a savings board game. Having earned tokens, the children played a game that presented them with a range of problems similar to those faced by them in everyday life. These included external threat (a rather mild-mannered robber who took just 1 token each time a child passed his hiding place) and temptation (passing a shop full of a variety of desirable sweets). The details of the board game varied between the studies but each had a shop from which the child had selected his or her preferred toy. This was the long-term target that the children were saving for. Each board game also included a bank (represented by a strong box), which was a possible strategy children could use to protect themselves from external threat or internal threat (temptation). In another study, a novel set-up was used, where the "board" gradually unrolled. This was intended to produce a situation where, as in real life, the future (including the length of the game) was unknown. Using a rather different approach, one study used a play economy where children took part and were interviewed in situ. This was situated in a suite of four rooms, in which a variety of activities that cost money (such as going to a video arcade, a sweet shop, and a café), as well as free activities (a library, a room with drawing materials), were available. Money was given out in the form of "daily" pocket money and the children had to save over a "week" to obtain their chosen toy (a day equalled a 10-minute time period). The parents of some participants were interviewed and, in one study, a questionnaire about their child's saving was completed by one parent. Participants were aged 4, 6, 9, and 12 years.

These studies give us some insight into the development of saving behaviour and children's understanding of saving. By age 6, children know that saving is a "good thing": They have learnt that self-control, patience, and thrift are virtuous. But although 6-year-olds know that saving is valued, they do not like it very much; nor do they save very well. Some see money

58 ECONOMICS

saved as money lost (Sarah, age 6—"If I put my money in the bank I won't have any left"). In one of the board game studies, children could deposit money in the bank before encountering the robber or the temptation of the sweet shop. This would mean that they had no cash so they couldn't spend any and the robber couldn't take any. Here, as in most of the studies, the major improvements in performance occurred between the ages of 6 and 9. At age 4 the use of the bank was essentially random. This was matched with a total absence of understanding. When Patty (age 4) was asked why she used the bank she replied "because I do". Six-year-olds did save, but only because they thought they ought to. The nine- and twelve-year-olds, on the other hand, understood the value of saving as a strategy to protect one's assets from threats from the inside (temptation) and outside (the robber). For example, Gail (age 9) said, "I'll put it [the money] in to make it safe from the robber". Mary (also aged 9), on landing on a square just before the toy shop, where she was able to take money out of the bank, reported "I won't take it [money] out of the bank as I don't want to be tempted". These findings were also mirrored in the play economy. Again 6-year-olds showed a limited ability to save (about half saved not at all) and many equated putting money in the bank with spending, so that money in the bank was money lost.

Most 9-year-olds and all 12-year-olds in these studies showed a functional understanding of saving. They knew what saving was for and they knew how to do it. But it is striking that children of this age had also developed other strategies for dealing with their financial affairs, most of which involved devices for getting more money out of their parents. Rather than saving being the ideal strategy, a few older children claimed that the best approach was to spend all one's money, and then emotionally blackmail parents to get more. For these older children saving is not seen as good *per se*, but one possible way of achieving a goal.

In some of the research on the development of children's thinking about economics described earlier, there were early stages where economic actions were explained in social terms. Similarly, in these studies of saving, the 6-year-olds said that they saved because it was a good thing and described the robber as "that naughty man". In one study children had the option of spending more tokens on something socially neutral (a ferry) or having fewer tokens robbed. Here the younger participants tended to choose the more expensive ferry (socially better but economically worse) whereas the older ones opted to brave the robber (socially worse but economically better).

These studies provide us with a fairly clear picture of children's understanding of their own saving but also leaves us with some residual puzzles. Berti (1993), in commenting on some of this work, points out that in the numerous studies of children's understanding of banks, no child, at any

age, mentions that one of the functions of a bank is to help its customers resist temptation. This suggests that children's understanding of adults' saving may be rather different to their understanding of their own. What the links are between understanding of one's own economic behaviour and that of others (especially adults) is an issue that needs to be pursued.

The autonomous economic world of childhood

It is obvious that children learn to understand economics through participating in, and being taught about, the adult economic world. It is less obvious, first, that there is also an autonomous economic world of children, a world of child-child economic and social relationships, and second, that this autonomous world may play an important part in children's understanding of economics. Webley (1996) and Webley and Lea (1993) describe a number of studies of this world, which they label "the playground economy". This natural economy is surprisingly sophisticated. For example, when marbles are "in", children between the ages of 8 and 12 years play marble games in the playground. These marbles come in a wide variety of sizes and colour combinations. These cost different amounts in the shops and, what is more important, have different values and names in the playground. The unit of value is the number of "goes" that a player can have in a marble game. Thus a "bonker cats-eye" is usually valued at 10 and in the standard marble game a player would have 10 attempts at hitting the target. Marbles also have an exchange value: They can be traded as well as won and lost. In this market, the value of the different kinds of marbles (galaxies, pixies, misties, etc.) is determined by their scarcity in the school and *not* by the price of the marbles in the shops.

In one simple study (Webley, 1996), 34 children between the age of 8 and 11 were presented with two contrasting scenarios. In one, a school won a competition and every child received 100 of a new type of marble called "a metal spotted dick". In the other, at a different school, a child brought along some of the new metal spotted dicks. In the scarce condition, the children said that the new marble would be worth over twice as much as in the common condition: 31 of the children explained this in terms of the rarity of the new marble. This suggests that children may have a far better understanding of how this market works than of the adult economy, which for them is more remote.

Remarkably, as well as trading, "working" is also found in the playground economy. A child who is skilled (the "worker"), but who, on a particular day, has no marbles, may "work" for another child (the marble capitalist) who owns lots of them. If the worker wins some marbles, the proceeds are shared between the two of them. An adult researcher asking about this is told that the proceeds are shared equally. A child researcher of

60 ECONOMICS

the same age, on the other hand, is told that the marble capitalist always gets a bigger share than the marble worker does.

Studies of swapping reveal a different side of the playground economy. Swapping is often banned in schools because teachers and parents are worried about older children exploiting younger children. But, despite sometimes being banned, swapping is widespread, particularly among 8- to 10-year-olds, and generally takes place at school. The recollections of adults and the accounts of children are very similar: Adults remember swapping pencils, stamps, beads, conkers, sweet cigarette cards, etc; children report swapping all kinds of stationery, toys, football cards, stickers, and so on. There was a consensus that items that are swapped should be of low value (partly to avoid parental disapproval). The children's accounts of why they swapped were of three kinds. First there were economic justifications ("getting rid of something you don't want any more and getting something back"), second, explanations in terms of friendship ("if we swap we become best friends"), and third, the idea of swapping as pure fun. From interviews and their responses to scenarios, it seems as if children understand swapping as an economic act with a social function. Its purpose is not really to acquire a toy, pencil, or sticker but to cement friendships. Younger children are happy to make swaps that are clearly economically a poor deal, but will always have a good reason for doing so, for example, as an overture to friendship. By approximately age 11, swapping is less popular, but is also conceived of in economic terms: It has turned into the adult act of bartering.

Although the research on children's autonomous economies is interesting, it is very limited. The data have been gathered in only one city, and it is impossible to know how significant this domain is. But I believe that, at least for some children, it is important in developing an understanding of economics that they will use later in the adult economic world.

Children from the perspective of economic theory

With a few honourable exceptions, economists have ignored children. But in recent years some experimental economists have carried out some studies that shed light both on children's economic behaviour and on their understanding of economics. Murnighan and Saxon (1998), for example, studied the development of children's ultimatum bargaining. In the ultimatum game there are two players, Albert and Ben. The rules are very simple—there is a resource (£10, a cake), Albert must decide how to divide it and Ben has to decide whether to accept Albert's division or not. If he rejects Albert's division neither of them get anything. According to standard rationality models, Albert should divide the resource into unequal parts (£9.99 to him, 1p to Ben) and Ben should accept this division, as this way

he at least gets something. If he rejected the division, he would be “cutting off his nose to spite his face”. In fact, in normal ultimatum games around 15% of divisions involve equal splits and in some cases (described in detail in Güth & Tietz, 1990) the proportion of equal splits is as high as 43%. What do children do and how does their behaviour change with age?

Murnighan and Saxon set out to answer these questions and studied children aged 6–15 years and college students. The children had to divide up either money or sweets. The youngest children would accept offers of only one sweet but were also very generous, and were the only ones who in some cases gave away all the money or sweets. They showed no evidence of guile or thinking strategically. The 9-year-olds, by contrast, tended to be strategic with money (that is making lower offers when the responder—“Ben”—did not know how large a sum was being divided) but not with sweets. With sweets they acted very fairly when they were offering or responding. Twelve-year-olds—oddly—made fewer strategic offers than the 9-year-olds. Overall, the 12-year-olds' and 15-year-olds' behaviour approximated to that of the college students, though they were more generous (in economic terms “less rational”) than the college students. What is interesting here is that the college students behave much more in line with economic theory, offering less but also accepting less than the children. In other words they would rather have something than nothing, whereas the children tended to reject what they saw as unfair offers.

Studies of rational choice by Harbaugh, Krause, and Berry (2001) tell a similar story. They carried out experiments to see whether children (aged 7 and 11 years) make rational choices about goods. The task they used tested a very basic requirement for rationality, namely that choices must be transitive. That is, if a person chooses A when they have a choice between A and B, and B when given a choice between B and C, if they are rational they must pick A when given a choice between A and C. Harbaugh et al.'s results show a substantial minority of the 7-year-olds act rationally, the majority of the 11-year-olds do, and the latter are just as rational in their decisions as undergraduates.

A final example looks at children's contributions in public good (social dilemma) experiments (Harbaugh & Krause, 2000). In a typical public good experiment, people have the choice between contributing to a public good (e.g., a pool of money that will be shared out equally) or acting selfishly and keeping the money for themselves. If everyone contributes, all are better off as a result—but for each individual there is a marginal gain in acting selfishly. In economic experiments on public goods, adults are more altruistic than economic theory predicts. Harbaugh and Krause found that overall the level of altruistic behaviour of children aged 6 to 12 is similar to that of adults, but that when children took part in experiments with many rounds the pattern over time is different. With adults, the standard finding

62 ECONOMICS

is that in later rounds people contribute less than in early rounds: In other words, that, through repeated experience, they learn to free ride. This is also the case for the older children. But the contributions of younger children actually increase over rounds, which suggests that they are better at maintaining social coherence and are less driven by the need to maximise economic returns.

What all these experiments suggest is that children's understanding of economic situations is broadly comparable to that of adults by the time they are 11 or 12. At this age they may need more experience to understand the complexities of particular economic institutions, as we saw in the section on banks, but their understanding of the economic structure of particular settings is essentially adult. These experiments also allow us to draw another conclusion. In approaching particular situations, children (and adults) must decide whether it is appropriate to conceive a situation as one where economic thinking is required. In some situations, the consensus would be that economic thinking is inappropriate (not everything has its price). These experiments show—like the studies on swapping—that around age 11–12 children are shifting to an adult definition of economic situations.

CONCLUSIONS

We have covered a lot of ground in this chapter, from children's understanding of adult economic phenomena, through children's own economic world, to children's understanding as manifest in their economic behaviour in experiments. What does it all add up to? What it is that causes the development of children's understanding of economics? Clearly domain-general cognitive changes are crucial, and underpin children's progressive understanding of economic concepts. As Siegler and Thompson (1998) spell out, the increasing ability to understand indirect as well as direct causal paths, negative correlations, and null effects are all significant factors. So too are other features of cognitive development: the ability to do complex arithmetic, to entertain multiple causation, and so on. Cognitive development is also important for children's understanding of their own economic behaviour: Making budgetary decisions about how much can be spent and when, and how to accumulate sufficient money to buy a desired toy, require a certain level mathematical reasoning ability. But there are other factors that may also be important. First there is a marked increase in economic independence and economic opportunities during childhood. Children's income typically increases considerably from age 5 to age 12 (Furnham, 1996) and there is a parallel increase in their opportunities (and freedom) to spend. From 13 years onwards, their income can increase even more, as they have the opportunity to participate (as part-time workers) in the adult

economy. Active participation in the economy is surely very important in understanding aspects of economics, and may account for the superiority over European children that African children (and those from Hong Kong) show with regard to economic understanding. Second, with increasing age, children have a greater exposure to indirect sources of information and may receive formal teaching about economics. It is clear from the literature on economics education (reviewed in Lewis, Webley, & Furnham, 1995) and the intervention literature (e.g., Berti, 1999) that it is possible to teach many economic concepts to children aged 7–11. Whether or not children get formal training, they are certainly exposed to many informal forms of economics education via television, other media, schools, and parental discourse. So the marketing material that is aimed at young savers by banks presents a view of saving as a good habit that is encouraged through the “prize” for saving, namely interest. Some of this marketing material is very clearly educational. For example, in a short story in a building society brochure we read the following “As Henry’s cat says ‘the money is safe and what is more they pay me to save with them’. ‘That sounds interesting’ says Mosey Mouse. ‘It is interesting, in fact it is interest and that is what they call it. When you leave your money in for a while it grows larger so you can get out more than you put in. That extra amount is called interest’ replies Henry’s cat” (Sonuga-Barke & Webley, 1993). There have been very few studies of socially mediated forms of communication about economics, but the likelihood is that they play an important role, particularly in acquiring more complex economic concepts.

These two factors (direct experience, indirect sources of information) are also crucial in creating variations in economic understanding, which have been rather downplayed in the literature. There are some important cross-cultural differences in economic understanding and though there is less evidence of this, within culture differences as well. These cross-cultural differences are probably most often demonstrated in the content of children’s explanations and relate to the social milieu and economic structures of the society in which they live. So rural South African black children tend to have a fatalistic outlook and think God is responsible for unemployment whereas the more prosperous semi-urban children regard lack of education and individual characteristics as more important. The complexity of the explanations the children offered for these various phenomena was, by contrast, much better predicted by their age than where they lived (Bonn, Earle, Lea, & Webley, 1999).

One issue that needs to be considered is the potential of the naïve theory approach in this area. Adopting a naïve theory framework has two notable advantages. First, it ties work on the development of children’s thinking about economics into a broader theory of children’s conceptual development. Second, it focuses our attention on different aspects of children’s

64 ECONOMICS

understanding of economics, particularly the causal relationships between domain-specific concepts such as demand, supply, and price or, in macro-economics, taxation, government spending, and gross domestic product. One issue it leaves unresolved, however, is what determines whether an issue is defined as economic or social. An adolescent could (like a social exchange theorist) think about his or her friendships in economic terms, and regard liking and loving as forms of utility. But most do not, and would find this kind of reasoning unacceptable. A related issue is the ideological nature of theories of economics (whether formal or naïve): They do not just describe and explain the world, but also legitimate certain ways of behaving and thinking. It is no accident that economics students behave more in line with economic theory than others!

We know more about children's understanding of economics than ever before, but there are still some limitations of our current knowledge. These are worth identifying, as dealing with them provides an agenda for future research. For example, our knowledge is based on very restricted samples. Studies of children's economic thinking have been carried out in only a very limited range of cultures and within-country differences have often been ignored. That is why studies of East European children (e.g., Wosinski & Pietras, 1990), which relate children's economic thinking to changes in macro-economic structures, are so valuable. Researchers have also, in general, used a very restricted range of methods. There have been too many interview studies and not enough experimental studies, and children are very rarely used as co-researchers. There has also been a lack of collaboration with other social scientists, particularly economists. A more serious problem is that economic concepts have been treated as givens and not considered in the wider social context. Think about the core economic concept of price. This applies not only to goods but also to labour (a wage is the price an employer must pay for a person's services). Then think about gender inequalities in wages—it is clear to most of us that these are not a simple consequence of the working out of supply and demand. So a child who is thinking about this kind of issue needs to use concepts like power, take into account institutional arrangements, and place the current situation in historical context. Closer to home, a child may wonder how the price of school dinners relates to the price of lunch in a local café, or a student wonder how tuition fees (the price for education) are set. In other words, in order to make sense of children's understanding of economics, it needs to be placed in the broader context of children's understanding of society.

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