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The Idea of Inclusive Growth and Development Policy

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This paper explores the idea of Inclusive Growth as it has evolved over time since the Industrial Revolution in the West, and in the developing countries since 1950, when development economics and development policy were officially born. It is defined as a policy that deliberately seeks to achieve concurrently a dynamic relationship between the growth of per capita income, the distribution of income and the level of poverty in a growing society. The active pursuit of this three-pronged objective must, therefore, be the basic aim of development policy. Experience shows that this relationship, though generally true, is by no means automatic, nor is it amenable to quick fixes. The main premise of the present paper is that without inclusive growth the standard of living of a people cannot be raised on a permanent basis. The paper argues that to succeed in grasping the Holy Grail will require a major rethinking of development policies to guide developing countries along a high-growth trajectory. In particular, development policies that the fast-growers (especially the miracle-growers of East Asia and now China) have pursued must also form part of the policy-packages of developing countries together with measures to promote high rates of saving to finance the investment requirements of a fast-growing economy, and government-supported import-substituting industrialisation, among others. Yet, the policies of the fast-growers need not be imitated blindly. But they should be adjusted to take into account new knowledge about the development process. To institutionalise growth on a long-term basis, governments must also prepare a new social contract to lay firm foundations of a dynamic society based on social justice; which, in turn, requires a creative synergy of economic, political and social forces at work in the society.

The evolution of development policy over time can be characterised as a faltering pursuit of inclusive growth: namely, an integrated programme of achieving highest possible rate of growth of real GDP that doubles per capita income within a short period, with an eye on distributive justice and an undivided focus on reduction in poverty. There is a link that ties these apparently disparate policy objectives; but these links need to be strengthened by deliberate government policy to make them fully functional.[1] It is only by achieving these connected objectives simultaneously, or in quick succession, that efforts to bring prosperity to people can succeed.[2] The greatest minds in economics from the times of

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[1]I first stated in great detail the above mentioned proposition in Naqvi (1992); and then in (1995); (2010). For a similar line of argument see also Bourguignon (2004) and World Bank (2008) and Spence (2010).

[2]Thus, if inequality of income increases significantly relative to the increase in average per capita GDP, then it is possible for many people, especially those in the lower income group may be worse off even though average income is rising [Stiglitz, Sen, Fitoussi (2012), p. 3].

Adam Smith to Mills, Marx, Marshall and Keynes to the present era have strived to address this problem. Yet it remains an unfinished agenda of human development—equivalent to the mathematical problem of "squaring the circle". Even in the Western societies, where the search for inclusive growth began in the 18th century, the process is by no means complete. Indeed, at the policy-making level, it started taking shape after World War II. In the developing countries, the search began in 1950 but has been taking shape much more quickly in the fast-developing countries. It is, therefore, apt that the success of a set of development policies is judged by reference to the fulfilment or non-fulfilment of this universally valid amorphous objective. Experience shows that it is a fairly faithful barometer of the state of a society that is both dynamic and just. However, the successful pursuit of this agenda is a non-trivial exercise, though by no means impossible. There has been a negative relationship between growth and income distribution on the one hand; and between economic growth and poverty on the other hand—though in this average picture there is considerable variation. There is little doubt that the more equitable, widely shared and poverty-reducing growth is, the more sustainable it would likely be in the long run; and that high growth of per capita GDP sustained over long periods of time leads the way in pressing forward with inclusive growth.[3] But success depends on full comprehension of the economic, political and ethical aspects of the issue; it also depends on the earnestness with which governments grasp the nettle, because leaving it to the market will not do. The governments must forge implicit or explicit social contracts with the people so that people voluntarily part with substantial amounts of savings to finance futuristic investments. In short, to sustain high growth rates over long periods of time, governments must move along the entire water-front, so to speak.

It may be noted in this context that determining the size of the government has been one of the most wasteful academic pastime and the most damaging for development efforts. Rather the focus should be on its effectiveness in terms of its success in ensuring inclusive growth. In the last half a century, there have been examples of countries which have succeeded in weaving these elements of inclusive growth into a self-reinforcing process (South Korea, China, Singapore, for instance); and there have been instances of failure too (the Philippines, Mexico, Argentina). In each case of success, the growth rate of per capita income has been kept high and stable, and inequalities of income and wealth have not been allowed to increase. And in each of these cases the development policies have been implemented by the Visible Hand of the government in league with the so-called 'Invisible Hand' of the market. Interestingly the successful policies have generally deviated from the so-called "first-best" market-only policies that aid-giving countries routinely prescribe to those who knock at their doors. The exact line of division between the government and the market has, however, shifted over time in specific development contexts.

The present essay seeks to outline the manner in which the problem of achieving inclusive growth in its multi-dimensional complexity has been tackled since 1950, when most developing countries got their independence from Western colonial rule. To provide a perspective, the history of development policy in the West since the Industrial Revolution is also briefly recounted to see whether the policies pursued since

[3]A concentration on the GDP statistic has been debated no end, and so has its implication for national welfare. We discuss briefly this problem in this paper; but hold the view that there is no other number as yet that summarises the state of the economy in the form of a single number.

independence by the developing countries marked a heretical break from the past practices that made Western countries rich and prosperous or are they a continuation of the practices they had been following since the Industrial Revolution? This essay subscribes to the latter view. To analyse this problem in greater detail we cite three recent works that try to address it. The first outlines the general historical account of the emergence of economic and political institutions since the Industrial Revolution in England and elsewhere in the West to sustain inclusive economic growth; while the second discusses the nature of development policies adopted by these countries to bring about Industrial Revolution and sustain it thereafter. The third study shows the slow evolution of the set of policies that have formed the nucleus of inclusive growth.

I. THE PURSUIT OF INCLUSIVE GROWTH SINCE THE INDUSTRIAL REVOLUTION

Acemoglu and Robinson (2012) present a historically rich account of development successes (failures) of nations throughout the world. They maintain that inclusive growth on a sustained basis flows from aconcatenation of "inclusive" economic *and* political (democratic) institutions, with a view to distributing political power broadly and imposing enough constraints on the abuse of political power by the élites. It ensures secure property rights for facilitating future investment and spreads the fruits of development success to the widest proportion of a country's population, gradually but surely. It also insists on the establishment of an unbiased system of laws so that people live by law in a democratic framework. Furthermore, it provides public services and allows freedom to people of making contracts with individuals of their choice. The interaction of inclusive political and economic institutions tends to generate virtuous circles of widespread prosperity and well-being. On the other hand, when political and economic institutions are out of synch and extractive, they create vicious circles of poverty, misery and 'ill-being'. Both types of circles tend to be reinforcing and perpetuating, which are hard to reverse, so there is an element of historical determinism in the way that nations succeed or fail. But this is not the end of the story. Indeed, human volition and determined effort play a decisive part in shaping the destiny of nations. There are cases of countries, especially those which served under colonial rule, that succeeded in turning extractive economic and political institutions into inclusive ones (South Korea, for instance) and vice versa. The central idea here is that inclusive political and economic institutions nurture industrialisation, fuelled by free-market competition, innovation and a process of creative destruction (one that destroys out-of-date production technology and replaces it by top-of-line technology), what Schumpeter pointed out not so long ago. However, creative destruction cannot come about if the political forces supporting the old methods of production are strong enough to block the forward march of a revitalised industrial process based on state-of-the-art methods of production. Anti-trust laws must, therefore, be enforced to foreclose such possibilities. However, the authors are careful to point out that they do not subscribe to free-market *ideology* that abhors *any* state intervention for the good of the society. Instead, they explicitly recognise that "inclusive institutions need and use the state" (p. 76).

Acemoglu and Robinson trace the origins of the inclusive institutions in what is now known as the First World back to the Industrial Revolution of 1779 in England and

before that to the Glorious Revolution of 1688, also in England, both of which had the effect of decentralising economic decision-making. The French Revolution of 1789, which swept away the decadent *ancien regime*, also brought about a profound transformation in the economic and political structures of European societies. These historical "turning points" led to a consolidation of inclusive political institutions by centralising political power *and* making it truly pluralistic by diffusing it among the largest number of people. This process helped block the operation of what is called the Iron Law of Oligarchy—namely, one that simply replaces one set of extractive political institutions by another set of equally or even more extractive political institutions. In the two centuries following the Industrial Revolution, such a concatenation of political and economic forces, brought about by unanticipated "small differences and contingency", has favoured the adoption of technological change in Western Europe and the USA. These institutional changes have been duly supported by mass education and the provision of health services to the people. Thus, at least for the 1/10th of humanity located in the West, the ideal of inclusive growth has gone quite far, though haltingly and slowly, and dogged by vested interests.

The present essay broadly supports this analytical framework for assessing the sustainability of long-term growth and social justice in developing countries, but considers it to be an insufficient basis for formulating a sound development policy for inclusive growth (To be fair to them, the authors *do not* recommend that their analysis is used for designing a policy "to encourage change towards inclusive institutions" (p. 437). The reason is that the institutions necessary to conceive and deliver inclusive economic growth, depending as they do on unanticipated accidental and contingency factors, cannot be replicated by calling into play these past events, some of which are of a once-in-a-century type of occurrences. Much less is it feasible to legislate and implement a development policy based on accidents of history. Another shortcoming of their analysis is the assumption that there is a direct link between democracy and economic development. While the importance of democracy cannot be denied in helping to diffuse the fruits of economic progress, the relationship is quite complex. The forces that help fast growth are many and they operate even if the country is not formally democratic. This has led them to wrongly evaluate the long-term sustainability of the Chinese miracle.[4] However, the one solid idea they emphasise, and the one that this essay also

[4]Even for assessing the long-term possibilities, their prediction concerning China is unduly pessimistic. They predict that Chinese growth "based on catch-up, import of foreign technology and export of low-end manufacturing products—is likely to come to an end—and[its] spectacular growth rates will slowly evaporate"(p. 442). This statement really sounds more like an anti-Chinese propaganda than a scientific statement. The spectacular growth rates are based more on the expansion of the domestic market by import substitution of a gradually higher order than on export fetishism and on an essentially balanced development of the economy. Its exports are not all that cheap copycats of Western products either and have gradually moved to greater sophisticated exports of mechanical and electronics and computer-based products. The basis of their pessimism is that Chinese political institutions are authoritarian and are expected to remain extractive rests on a rather primitive definition of democracy, based on elections and public balloting. Thus, for instance, they misattribute South Korea's and Singapore's ascent to First World status to elected governments. The fact is that the governments of these countries (and especially Singapore's) are no less authoritarian than Chinese. For purposes of inclusive economic growth what is needed is deliberative democracy, one that allows public discussion of matters of concern for the people. This is happening in China through the TVE's (The Town and Village Enterprises), which have allowed much greater degree of decentralisation of industrialisation process than even in India. See, Bardhan (2011), and also footnote 16.

singles out for detailed discussion, is the role of industrialism, supported by innovation and creative destruction, as holding the key to inclusive growth.

II. THE ENLIGHTENMENT ECONOMICS AND INCLUSIVE GROWTH

The nearly universally accepted wisdom about the Industrial Revolution's role in the creation and cementing of the inclusive economic and political institutions is that it was an integral part of the essentially beneficial project known as European Enlightenment, which based human institutions and processes on rational thought rather than on religious superstition. England and other European states which had adopted Industrial Revolution technologies practised a free-market economy and did *laissez-faire*, based on their comparative advantage or disadvantage, keeping the government on the fringes of economic activity though not out of it. Accordingly, it is argued that the labour-surplus countries would produce labour-intensive agriculture goods (Portugal in Ricardo's example), and the capital-abundant countries capital-intensive manufactured goods (England in this example). If each trading country's productive resources were so organised, the returns to raw material producers and manufacturing producers would be equalised across countries, and so would the wages to labour and the rental on capital, both relatively and absolutely. Thus both the production and distribution of income between capital and labour would be optimised, regardless of the commodities (agricultural or manufacturing) the trading countries produce. There would, therefore, be no need to change the production structure of either country, in particular by import-substitution-led manufacturing. European Enlightenment based on *laissez faire*, free markets and minimum government, has thus been seen as a universal force for the good of both the labour-abundant and capital-abundant countries, both production-wise and distribution-wise.[5]

Reinert (2011) in his wide-ranging study of the nature of Industrial Revolution in England, its spread to Europe and the US, and the general atmosphere in which trading relations were done, concludes that "Enlightenment" economics cannot be equated with laissez-faire, and "there is little heuristic value in continuing to equate, for good or bad, "economic liberalism" with the "Enlightenment Project", whatever any of those phrases may mean"(p. 283). Indeed, he shows at length that in those European countries which were powerful enough to decide their economic policies, *industrialisation was actively promoted by heavy state intervention.* Tariffs were selectively imposed to curtail international trade to "ensure the development of domestic productive capacity" (p.281). Not only that import-substituting industrialisation at home was protected, but its fruits were not allowed to accrue to the weaker countries in Europe.[6] He gives the tragic example of Naples, which tried to adopt English type "import-substituting industrialisation" and had become the most industrialised state in Italy, but which was punished for this emulation by British gunboats to destroy these industries; to add insult

[5]It is therefore not surprising that noble souls like Jacob Viner and Haberler have, for reasons stated above, fervently advised the developing countries, in the post-colonial times, not to fall for the guiles of industrialisation in violation of the inviolable Law of Comparative Advantage---that is to continue in the footsteps of the Industrial Revolution that brought such prosperity to the West; and that any deviation from it would bring only the economic ruination of the Third World.

[6]In similar vein, Jacob (1997) has pointed out that the Industrial Revolution in England involved massive state intervention by the state.

to injury, Naples was made to pay heavy indemnities for hurting the British interests. He observes "free trade simply meant England's freedom to export manufactured (*sic*) in exchange for foreign raw materials, a practice oxymoronically known as "free-trade imperialism" (p. 279). Indeed, this was the universal practice, designed to prevent the late-comers from catching up with the pioneers. The latter meant England and few European countries which could take independent decisions. The law of comparative advantage was indeed a subterfuge to justify free-trade imperialism. Indeed, the example given above to prove the worth of the law of comparative advantage, called the crown jewel of economics, gave England the right to produce and export manufactured goods, and for the poorer Portugal the only option was to continue producing and exporting low value-added wine—and to stay happy with that position ever after. The great German-American economist, Friedrich List (1844) summed up the widespread mood of frustration at the double-speak of the English economists in support of the beneficence of *laissez faire*: "It is a commonplace rule that when someone has attained the summit of greatness, he throws away the ladder by which he climbed up, in order to deprive others of the means of climbing up after him. Herein lies the secret of Adam Smith's cosmopolitical teachings, the cosmopolitical tendencies of his great contemporary William Pitt, and of all their heirs in the British government administration". [cited in Reinert (2011), p.43].[7] As per this account, the goal of inclusive growth was primarily meant to be pursued by and for the powerful states of Europe.

The Slow Boat to Inclusive Growth in the West: It may be noted in concluding this brief survey of the evolution of the idea of inclusive growth and its relationship with actual policies in the First World, that the process of achieving it which began in the 18th Century is far from complete to this day. Nasr (2011) has recounted in detail the slow process of the acceptance of the idea of Inclusive Growth as a valid economic principle that could form the basis of a fruitful development policy. From Ricardo to Mills, Malthus and Marx, it was believed the lot of the poor could not be improved on a long-term basis in an industrialising society, such that the Industrial Revolution ushered. The Wages Fund theory prescribed that wages were tethered to a physiological minimum so that a rise in wages would only lead the working class to procreate more adding to the supply of labour and pushing down the wage level to the original level. The share of wages in total national income therefore could not rise on a permanent basis, which made it impossible to raise the share of wages in national income. The increase in productivity would also not help the workers for the same reason. It was Marshall who, based on his careful study of the industrialisation process in the US and England, argued otherwise. He maintained that economic growth, pushed by an increased industrial productivity, would benefit the workers because competition would force the employers to share a good portion of their profits with the workers, first as wage-earners and then as consumers. As if to prove Mills and Marx wrong and Marshall right, the share of wages in total income and living standards of the poor had increased over time. But the idea of a Welfare State (which Beatrice Webb called the "house-keeping state"), and that of a National Minimum, took much longer to get acceptance in the West. It was only in the aftermath of the Great Depression and World War II (and forced by the logic of

[7]Schumpeter (1954) echoed the same feeling much later when he characterised Ricardian theory as: "it is an excellent theory that can never be refuted and lacks nothing save sense" (p. 473).

Keynesian Revolution) that the role of the state in improving the conditions of the poor was recognised. As described briefly in Section V below, the resistance to the idea of a welfare state has gathered momentum in the West since the 1970's, under the leadership of Hayek and Friedman. The Great Recession has again brought to the fore the evils of involuntary unemployment and the need for determined government action in the US and to a lesser degree in Europe.[8] Yet once again, the western world is divided between those who believe in austerity-based approach to fight recession; for them controlling inflation and containing budgetary deficits takes priority over finding cures for high and persistent unemployment; and those who adopt the Keynesian-type approach which accords priority to finding a solution to unemployment. The former side step any thought of welfare state while the latter care for it. Correspondingly, the former has all but forsaken the search for inclusive growth; and the former has joined it with renewed vigour.The point to emphasise here is that the search for inclusive growth, though it sounds reasonable, proceeds by fits and starts, depending on the direction in which the intellectual wind is blowing at a particular point in time.

III. COLONIAL DEVELOPMENT POLICY AND NON-INCLUSIVE GROWTH

We now pass on from the West to the developing countries and see how the idea of inclusive growth fared under the long night of colonial rule that these unfortunate countries had to suffer through. As one would expect in the light of the preceding discussion, the colonial policy was one of *enforced* non-development. It did not allow industrialism to prosper in the countries the same way it was in the weaker nations of the West, with the result that agricultural productivity in these countries was also kept low. *Laissez faire* and minimum government were the basic non-policy tools. Acemoglu and Robinson (2012) debunk the usual claims that colonial rule was in any way beneficial to the colonies. Indeed, the "the profitability of European colonial empires was often built on the destruction of independent polities and indigenous economies around the world ..." (p. 271). Nearer home, the Indian textile industry, which in the 18th century supplied textiles to the entire world, was destroyed by the British to keep their own textile industry alive. The spoliation of Africa was perhaps much worse and brutal. They cite these examples, as an explanation of "why industrialisation passed by large parts of the world but also encapsulates how economic development may sometimes feed on, or even create, the underdevelopment in some other parts of the world" (p. 273). Quite predictably, the result was a long period of static growth, high unemployment, poverty and misery in the colonies. As Reynolds (1983) points out, this period was marked by a total absence of the sparks of innovation and technological change. To put it bluntly, the quest for inclusive growth had all but been given up in the colonies. The wheel of economic progress was made to run in the reverse.

[8]Of late there are factors that have undermined this process—for instance, the usurpation of the political process by corporate interests and the rising inequalities of income and wealth most pointedly in the US but in other OECD countries as well. Two important studies bring out the phenomenon of rising inequalities in the US—Stiglitz (2012) and Noah (2012). Both point out a progressive concentration of power and wealth in the hands of the 1 percent—indeed, 0.1 percent—of the population in the US, while the rest continue to face extreme hardship. This has made capitalism dysfunctional and socially disruptive. Both conclude that remedial action needs to be taken before it is too late.

IV. THE QUEST FOR INCLUSIVE GROWTH UNDER THE PIONEERS OF DEVELOPMENT ECONOMICS

Thus political and economic under-development was *the* problem facing development economists and policy-makers at the time of Independence in 1950. Even though there were differences across countries on what was needed to be done to change the state of these societies for the better, there was widespread consensus to grow fast enough to reduce poverty and to converge with the developed countries. Even though the growth possibilities of the colonies at the time were considered too low, the development economists and policy-makers were quite upbeat about the chances of success in transforming these societies peacefully from predominantly agrarian to industrialised ones.[9] Fortunately, they knew their economic history very well; and had experienced first-hand the ravages of the colonial policy. They knew that there was no way to achieve it except by reversing the colonial development policies that had clearly retarded the growth and development of the developing countries for about a century or so; and that import-substitution industrialisation helped by government protectionist policies was the *only* means to achieving prosperity. To continue with *laissez faire* and minimal government would tantamount to keeping them permanently poor. At any rate, any policy that gave the impression of perpetuating pre-Independence policies would have been politically unacceptable and those responsible for advocating such views would have been lynched as enemy agents!

Two basic ideas undergird the development policy at the time: namely, the ideas of Inter-sectoral Balance in the design of development and that of Structural Transformation. Both these ideas are described by Lewis's two-sector model as set out in his Nobel Prize winning "Unlimited supplies of labour" article. The first idea was to enlarge the domestic market and ensure a full utilisation of the demand spill-overs from the industrial to agriculture sector and *vice versa*. It was necessary to keep a dynamic balance between them. The general equilibrium economist that he was, Arthur Lewis clearly saw that to industrialise without promoting agricultural improvements "is to ruin the industrialists (who won't have enough workers or consumers) and to improve agriculture without industrialisation will ruin the farmers (who will live in a society with vast hordes of unemployed" [cited in Tignor (2006), p. 87].[10] The second element elaborated on the character of industrialism—the process of the Structural Transformation of an agrarian society into an urbanised one—from a state of "cottage equilibrium to one of industrial equilibrium", and then to ensure that it gradually moved from lower-order manufacturing to higher-order manufacturing. The basic idea here was to arrange for a steady transfer of less productive agriculture to industrial sector at a practically unchanged wage, indicating that even at the subsistence wage the supply of labour exceeded the demand for it. However, since the opportunity cost of labour would typically be significantly lower than the actual wages paid to it in manufacturing, the social return to employment in the manufacturing sector would typically tend to exceed private returns. Import substitution for both the domestic markets *and* the export markets, helped by innovation and technological change,

[9]The best forecast for the long-term growth possibilities did not exceed 0.50 percent for India and Pakistan before their Independence in 1947. Things were no better for other colonies [Clark (1984**)].**

[10]The idea of keeping inter-sectoral balance between agriculture and industry by keeping an equation between wage goods and food has been fully explored in Mellor (1986).

was seen as the basic mechanism to achieve both elements of development policy, noted above. In the long run, it had the effect of raising exports as a percentage of GDP by diversifying the exports. It would be financed by a higher level of saving and investment that would be created in this process. However, it was emphasised that not only physical capital formation but also knowledge formation wascentral to this process. Indeed, Lewis in his (1955) classic isolated three factors—namely, the will to economise, the accumulation of knowledge and the accumulation of capital—as holding the key to making a successful transition from a rural static state to an industrial dynamic state. The object of economic and social development was diagnosed as the fastest growth of per capita income by ever-rising rates of saving and investment and maximum employment generation to eradicate poverty as quickly as possible and to attain the high-income status of the rich countries in the foreseeable future. He also emphasised women's participation in outdoor economic activities as essential on economic as well as moral grounds. However, he and other development economists were clear that, to cite Lewis's maxim, "The horse of development should go in front carrying the cart of welfare behind it" [Tignor (2006), p. 37]. But to harness the vast and complex potentialities of economic and human development, there was need for government-supported planned development. He emphasised that the newly independent countries will need "planning, planning and planning of the highest order" [cited in Tignor (2006), p. 84]. The Invisible Hand of the market could not be relied upon to do the heavy duty job of paving the way for Structural Transformation.

Three points may be noted about the development policies. Firstly, it should be clear from this summary statement of the pioneers' ideas that, contrary to the popular-liberalist critique, they presented development economics not as an isolationist subject, having no connection with mainstream economics. These ideas, rather being heretical, were orthodox in that they represented a continuation of the development policies of the Industrial Revolution and Enlightenment Economics in terms of the basic underlying principles as well as the development policy that made it possible. As Tignor (2006) reports, both the basic ideas underlying Lewis's two-sector model—surplus agricultural labour financing industrial development, and the emergence of an entrepreneurial class which would plough back their profits into greater investment—came from his reading of the factors contributing to the Industrial Revolution.

Secondly, while the development policy at the time represented a continuation of the historical trend set by the Industrial Revolution in rejecting *laissez-faire* and using state intervention to implement import-substitution policies, it was truly cosmopolitan in outlook. While these policies were implemented in the 18th century by England in an isolationist manner, denying the weaker countries the greatness it achieved for itself; no such thing was evident in the attitude of the development economists and policy-makers. The basic ideas of development economics, with different degrees of emphasis, were universally adopted by all developing countries, big and small; and the development economists from all regions frequently exchanged views in an atmosphere of bonhomie on matters of common interest regarding the development policies for sparking and sustaining high and inclusive growth rates.[11]

[11]For instance, Tignor (2006) reports that for discussing Ghana's Seven year Plan nearly all the prominent development economists in the West and the East—Lewis, Hirschman, K. N. Raj, N. C. Bos, Wignaraja and Ramanujan etc.—participated in an atmosphere of kinship and common concern for uplifting the underdeveloped countries.

Thirdly, these policies were essentially egalitarian in character. Although, the Industrial Revolution was regarded by development economists as the high point of human ingenuity to transform static economies into dynamic economies, it was also clear in their minds that it would not be proper to copy the Industrial Revolution's brutal methods. They knew that uncontrolled industrialism destroyed happiness and well-being more rapidly than it created that. So the emphasis was laid on *planning* for balanced development in an open economy, with ample resources devoted to education and social welfare programmes.[12] However, all this could not be achieved without introducing basic reforms to abolish feudalism and to maximise women participation in paid outdoor work. Such reformist views came naturally to development economists like Arthur Lewis many of whom were Fabian socialists, who rejected both the liberalist prescription of the free-markets and the complete socialisation of the means of production, as the communists demanded. Their reformist ideas were clearly aimed at ensuring fast economic growth with a modicum of social justice. Lewis, wrote: "The only long-term solution for [poor countries] was industrialisation, which was possible—only if accompanied by a radical programme of redistributing income from inordinately rich to the large number of impoverished" [Tignor (2006), p. 45]. Furthermore, it was emphasised that such reforms could be achieved best within the framework of a pluralistic and democratic polity to make them truly inclusive. The emphasis has been on treating high growth rate of per capita income, distribution of income and poverty reduction as an integral whole—to pursue inclusive growth, that is.

Development economists of the time sincerely believed that their ideas could bring about a peaceful transformation of the developing countries, eschewing class warfare. Indeed, these ideas with different degrees of emphasis in view of the local conditions were put in the form of blueprints for economic progress in Ghana and elsewhere in the newly liberated African countries. And it did not take too long to see their hopes fulfilled in the form of high rates of economic growth, industrialisation and a more egalitarian development pattern in comparison with pre-colonial policies. Under the leadership of Raul Prebisch, Latin America celebrated its Golden Period of economic growth during the 1950 to 1980 period. Following similar policies, India laid solid foundations for future growth under the leadership of Mahalanobis and the modern fast growth of the Indian economy is based on these earlier policies rather than being the outcome of free-market reforms.[13] East Asia and now China have posted miraculous growth, never experienced at any time in human history. Africa too has experienced solid growth. Botswana has been the star performer here. Yet another example of fast growth is that of the war-ravaged Vietnam which has practised similar development strategy. In all these cases (except perhaps Vietnam where poverty remains high) growth of per capita income has occurred with a reasonable degree of distribution of income and wealth; and the incidence of poverty has been reduced dramatically wherever growth of per capita income has risen fast consistently to double per capita income within a decade or so. Indeed, these ideas, wherever implemented conscientiously, changed those societies

[12]It is worth noting that all the international institutions like the GATT and the World Bank recognised the crucial importance of planned development at the time. In England, the Colonial Office, for which Lewis also worked, had accorded broad support to his ideas.

[13]This point is elaborated at considerable length in Bardhan (2010).

beyond the dreams of the founding fathers of the discipline of development economics. They could not have dreamt of saving and investment rates exceeding 35 to 40 percent (the latest figure for China is 49 percent) of GDP and growth rates of per capita income fast enough to double it in a decade or so, breaking all the barriers of underdevelopment and smashing all the sticky vicious circles of poverty and human deprivation.

V. THE LIBERALIST CREED AND NON-DEVELOPMENT

One would have expected that in view of their spectacular *success*, the development policies pursued in the wake of Independence would win universal approval and pursued with greater zeal and with a greater understanding of the development process. But beginning in 1980 the most outré event happened.[14] With an unsettling suddenness, liberalist thinking "dethroned" the ruling development paradigm and replaced it by the so-called "first-best policies"—namely, minimal government, *laissez faire* and export fetishism based on the static principle of comparative advantage—in the belief that it would also produce first-best (Pareto-optimal) results. In effect, this meant reversion to colonial economic policies briefly reviewed above and the virtual abandonment of the inclusive growth ideal—all in the name of achieving static efficiency—Pareto-optimality, that is.[15] Development priorities changed drastically overnight, unrelated to the development experience in the preceding post-colonial time.

The shift to liberalism in Europe began in response to the Keynesian rejection of the minimal government philosophy that regarded every government intervention a denial of free markets and as paving the road to state tyranny and serfdom. It also regarded every effort to establish social justice by redistribution of income and wealth an attack on human liberty. Under the leadership of Hayek, the Mont Perelin society was founded in 1947—including such luminaries as George Stigler, Milton Friedman, Lionel Robbins, Paul Volker, Fritz Machlup, Karl Popper, Frank Knight, etc.—to safeguard the central values of civilisation, to fight the decline in belief in private property and competitive market, to contribute to the preservation of free society [Wapshott (2011), p. 214].[16] By its phrasing and content it launched a crusade-type movement to dismantle Keynesian thinking. These ideas assumed a quasi-religious dimension that could not be refuted by reference to their effects on the society. Initially derided, these ideas were adopted first by the British Prime Minister Thatcher under the influence of Hayek; and then by the US President Ronald Reagan who was deeply influenced by Milton Friedman. Both the economists had their differences but agreed that inflation was more dangerous than unemployment. Small government became a keyword for policy-makers in both Britain and the USA, trusting private initiative more than government intervention. Monetary policy, to be implemented by the Federal Reserve Board, was considered as the more potent and relevant policy tool than fiscal policy, even to fight depression-like situations.

[14]Interestingly, the outbreak of liberalism in the developing countries coincided with the decline of Keynesian economics in the US and England. Alan Blander, is quoted as saying: " by about 1980 it was hard to find an American macroeconomist under the age of forty who professed to be a Keynesian" [cited in Wapshott (2012), p. 268].

[15]Indeed, Lal (1983) in a popular book argued that Pareto optimality be adopted as a guiding principle of development policy!

[16]The report from which the quotation in the text is taken was drafted by none other than the Secretary of the Society, Lionel Robbins.

Indeed, Friedman, in many respects the alter ego of Hayek in the US,'proved' that Great Depression, which he called Great Contraction, "is a tragic testimony to the power of the monetary policy—not as Keynes believed testimony to its impotence" [cited in Wapshott (2012), p. 249]. In other words, an economy deep in trouble needed, not a stimulation of effective demand as Keynes had advocated, but an adequate expansion of money supply. The emphasis on employment creation was replaced by keeping inflation rates at the lowest possible level, regarding the latter rather than the former as the economy's enemy number one.[17] If the economic process led by market forces spelt sacrifices on the people, then these must be endured. The government interference with the market forces would tantamount to blocking the working of the natural laws of economics, which were held to be as immutable as all other natural laws. Even the nature of economic agents changed: from the masters of their own destiny, they were made slaves of the economic laws. Finally, a Nobel Prize for both Hayek and Friedman put a seal of academic virtuosity and scientific probity on these ideas.

It is, therefore, no wonder that the pioneer development economist's policies—namely, their denial of *laissez faire* as an oriflamme of international economic relations, their fervent advocacy of industrialisation post-haste by government-sponsored programme of import substitution and their emphasis on egalitarian change in private property rights—became the target of a virulent liberalist attack and vilification. Those ideas, rather than being regarded as helpful for economic progress, were held responsible for greatly compromising the growth possibilities of developing countries. Since they relied on heavy government intervention, they *must have* ruined these economies by definition, regardless of what the actual situation was. If the situation looked good on the ground, then it must be an illusion! Thus, for instance, if privatisation did not increase competition but simply led to the creation of private monopolies, asset stripping and corruption on a massive scale—of which there are examples aplenty—then the remedy was more privatisation, and yet more privatisation. To take another example, if the free flow of short-term capital across national boundaries led to a contagion-like situation in East Asia in 1996-97, and made a sound exchange-rate policy impossible, they were still advised not to impose controls on them because a first-best policy could not be violated. Assuming no significant trade-offs between the winners and losers from growth, the Liberalist Paradigm has consciously ignored the equity-related reformist issue, because that would mean trampling over the individual's unlimited moral right to private property.[18] This religious attachment to *procedures*, rather than to the *outcomes* of these policies, also explains why the liberalist attach over-arching primacy to maintaining macroeconomic stability, which has been defined narrowly to focus only on low inflation rate, low budgetary and trade deficits as a percentage of GDP, and a "realistic" exchange rate.[19] And yet contrary to their expectations, the net result of the liberalist iconoclasm has been to slow down economic growth, increase unemployment, increase poverty and

[17]For a comparison of the Hayekian and the Keynesian positions see Wapshott (2012); ch. 3.

[18]For a detailed discussion of the moral aspects of liberalist philosophy see Chapter 9 of Naqvi (2010).

[19]The liberalist definition of macroeconomic stability is narrow, because a fuller definition of the term would also monitor, as any modern text on macroeconomics would show, the effect of the monetary, fiscal and foreign exchange rate policies on growth rates of GDP and the unemployment rate. The essence of public policy would then be to strike a balance between the monetary and real indices of macroeconomic stability.

widen the gap between the rich and the poor.[20] Latin America, having experienced stellar growth for more than 25 years implementing the ideas of pioneers, had to suffer more than 25 years of economic stagnation implementing the so-called first-best liberalist ideas, before emerging from it only recently, though rather at a slow rate. In sum, the search for inclusive growth in developing countries that had gathered momentum in the first thirty years of post-colonial period was either given a new meaning, or sacrificed altogether at the altar of macroeconomic stability. The solid lesson learned from development experience, especially that of the fast-growing developing countries, is that development cannot proceed over long periods in an atmosphere of macro-economic instability; but that valid concern is not a licence for a one-sided pursuit of macroeconomic stability, no matter what. In general, the liberalists have not been wrong in emphasising the need for macroeconomic stability; where they have gone sadly wrong is in focusing only on following certain procedures regardless of whether they produce the desired results—whether they do succeed in laying down the preconditions of long-term growth and also help the economy move beyond that to sustaining growth over long periods of time.

VI. THE ANTI-LIBERALIST CONSENSUS

At the same time as the Liberalist Paradigm gained currency in the academia and led to a general decline of interest in development economics and policy, an important event was the evolution of ideas that challenge the neo-classical position on *laissez faire* and the undesirability of government intervention on any grounds. At the centre of this Consensus is the theoretical literature that has made significant changes in the Arrow-Debreu version of neo-classical economics, by focusing attention on one of the key assumptions of the neo-classical model—namely, that information on both sides of the market is perfect and is cost-free. Under the leadership of Stiglitz and Akerlof, the Imperfect Information Paradigm has shown that with imperfect (and costly) information and incomplete markets competitive equilibrium is *not* generally unimprovable. In this framework, market failure is a rule rather than the exception. It creates immense policy space for Pareto-improving government intervention. Then there are studies that show that since unemployment is mostly involuntary, reducing the going (efficiency) wage rate would not necessarily improve market efficiency and create additional effective demand. Indeed, doing so is more likely to lower industrial productivity. Another set of studies showed that, in a dynamic context, when account is taken of dynamic external economies, the static comparative advantage would no longer be suitable as a criterion for optimal resource allocation; nor would it optimise growth or social welfare. In practice, no developing country that made it to the fast-growers table has ever developed by the dictates of static comparative advantage—neither in the West nor in the East. Instead, growth via industrialisation creates its own dynamic comparative advantage, as it would be using decreasing cost technologies rather than the pre-industrialisation constant-cost or increasing-cost technologies. An implication of this line of research is to

[20]Rodrik (2010) contains sharp criticism of the liberalist policies. Comparing these policies with those of fast growing countries like China, India etc. he remarks: "Given the policies in place in China, Vietnam and India, it is hardly an exaggeration that to say that it would have been easier to explain their performance if these countries had failed abysmally instead of succeeding the way they did." (p. 86).

turn one of the basic recommendations of the liberalist literature on its head and show that import substitution for both the domestic and the foreign markets, rather than export fetishism, would most likely lead to maximal growth—a point which history also confirms. Another development in the anti-liberalist vein has been studies that provided an analytical rendering of some of the basic ideas of the early development thinking—namely, the Structural Transformation and the Big-Push hypotheses, and their distributive implications—and are in fact of universal relevance and constitute a net addition to knowledge. They show that, even on strict efficiency grounds, a government-led simultaneous industrialisation programme where demand spill-overs between sectors are significant, would be the only available option for the simple reason that individual acts of industrialisation would not be possible under these circumstances.[21] It is, therefore, surprising that these potent ideas, which directly deny the relevance of the liberalist views for development policy, have not undermined the zeal of the academic community for liberalist ideas even today.

VII. THE HUMAN DEVELOPMENT PROGRAMME AND INCLUSIVE GROWTH

Among other charges levelled against the inadequacy of the development policies of the formative years, one has been their alleged exclusive focus on the fastest possible increase of per capita income as the *sole* indicator of human well-being, neglecting non-income aspects of human well-being; and that it emphasised physical capital formation and not knowledge creation. Generally, the pioneers were accused of commodity fetishism and being not concerned with capability formation. The brief discussion of the pioneer's ideas presented in Section IV above should be enough to reject these charges as ill-informed and based on a cursory reading of the early development literature. However, apart from this aspect of the UNDP-sponsored Human Development Paradigm, the fact remains that it has shifted the analytical and policy focus to a broader vision of human freedoms—one that allows individuals to make the choices they value most within the framework of an egalitarian and a democratic society that cares for human welfare and concentrates on enhancing social justice or minimising, if not eliminating it. To this end, it claims to focus on the complex relationship between rationality, freedom and justice to get a complete view of human motivation. The edifice of this paradigm rests on strong philosophical foundations; and this in fact is its most original contribution to our knowledge. Sen (2010), a co-founder of this research programme, points out that no less important than the actual achievements that a person ends up with is the *freedom* to choose among all the possible functionings that a person has. In other words, capabilities are not merely of instrumental value but the freedom to choose has intrinsic value, which a person cherishes. "The idea of capability—is oriented towards freedom and opportunities, that is the actual capability of people to choose to live different kinds of lives within their reach, rather than confining attention only to what may be described as the culmination—or aftermath—of choice" (p. 237). So far so good.

However, problems arise in the application of these elegant philosophical ideas to development-related issues; in particular when we pass on to their concrete formalisation

[21]The ideas noted in the text are due to Murphy, Shleifer and Vishny (1989a,b).

in statistically measurable terms. As is well-known, these are the ideas that undergird the new Human Development Index (HDI), which, since 1990, has been extended to adjust it to information about inequalities (IHDI) and the many other indices like the Multi-dimensional Poverty Index (MPI) that have been constructed to measure human happiness or unhappiness. By itself this information, published yearly by the UNDP in the Human Development Reports, is most invaluable in understanding the state of society's well-being or ill-being, and has gained international acceptability as a measure of human happiness. If nothing, it forces national governments to do better with respect to education and health, which are the non-income components of the HDI. It has also set in motion the search for a true set of indicator (or rather a set of indicators) of human happiness. However, going by international acceptability, the same is true of information on the growth rate of GDP per capita which is regarded no less than the HDI as an indicator of national health. It is still the most widely used criterion of economic performance, despite all the scepticism about it as a measure of human welfare. Countries falling behind in terms of growth rate and level of per capita income strive to better their record and try to converge to countries growing faster. The countries that have grown really fast and which have paid close attention to equity issues as well (e.g., South Korea, Indonesia, China) have achieved international recognition even more comprehensively than those which primarily improve their HDI record (like Sri Lanka, Nepal, Tunisia, Eastern Europe) but fall behind in growth terms. *HDR* (2010) duly notes that among the 10 top movers on the human development list, 7 are not high-growth countries. On the other hand, the fastest growing countries have also recorded definite improvements in terms of their HDI's. Thus, on the Spence's (2011) list of the 13 top movers on the growth scale—the Asian Tigers, Indonesia, Malaysia, Thailand, and Botswana, Malta, Oman, and Vietnam, India and Brazil—are also the countries that led to miraculous human development achievements in a very short period of time. China which tops this list achieved wondrous income and non-income improvements.[22] Thus, it is more convincing to reduce poverty dramatically on a sustained basis by growing very fast (say at 6-7 percent which doubles per capita income every 11 or 10 years) in an inclusive way [Naqvi (1995, 2010) and Spence (2011), p. 54].[23] In general, I show elsewhere that the support-led growth that the UNDP favours is not a substitute for what they call the growth-mediated strategy of growth. Careful empirical estimation shows fairly convincingly that (i) a fast GDP growth rate of per capita GDP leads to greater HDI improvements than the reverse chain of causation. Also, (ii) improvements in the former make a more decisive impact on poverty than the latter. And there is a solid economic sense in this sequence. It is that investment in human capital is required for its own sake but its effects on growth are more indirect and less obvious than those of physical capital formation. However, this is not belittling the importance of the human development programme's contribution to human knowledge. Furthermore, while it is absolutely correct to point out the inadequacy of the rate of growth of per capita GDP as the *sole* reflector of human well-being and to emphasise the need for statistical improvements to devise multiple indices of welfare, but doing all that is not necessarily an argument against pushing for the highest growth rate of GDP to improve the living standards of the

[22]Spence (2011) is essentially a formalisation of the Report of the World Bank (2008).
[23]The latest report is that China has reduced poverty to only 2.3 percent.

people. The problem is not one of supplanting, but of supplementing the GDP measure with other relevant measures of human well-being to serve as the basis of an inclusive growth strategy. Experience shows that it is not enough to add to the supply of education but it is also essential to create a strong demand for it, which however comes from high growth.

All in all, it is fair to say that, for all its merits, the Human Development Paradigm does *not* focus on pursuing inclusive growth, as it has shifted the emphasis from achieving the fastest possible increase in the per capita GDP as its primary objective.

VIII. THE NEED TO CONTINUE SEARCHING FOR INCLUSIVE GROWTH

The survey of the evolution of the ideas underlying development policy in the developed and the developing countries presented in preceding sections shows that what we live in can be called as an Age of Confusion in the realm of ideas as far as a commitment to raising the welfare of 9/10th of humankind is concerned. With the exception of the 13 fast-growers listed above, the search of inclusive growth has either been given up or given a new (and incomplete) meaning in the developing as well as the developed countries. At present we have a cocktail of the liberalist agenda and the human development programme running together; while the ideas of the pioneers of development that did focus on inclusive growth have been rejected in academic literature on one false ground or another, even though these ideas continue to be practised in high-growth economies, and there is a large body of theoretical literature that supports them. The analysis presented above should make it clear that the liberalist agenda has no relevance whatsoever to an inclusive-growth oriented development policy—indeed, it is anti-development. Even though its emphasis on macroeconomic stability is most welcome, since macroeconomic instability hinders growth and makes it unstable; yet it must face the charge of one-sidedness even on this count—that it has pursued its narrow agenda without regard to such basic objectives as growth, distributive justice and poverty reduction. Most of its anti-poverty programmes end up by increasing it! The human development programme, though philosophically impeccable, is not a sure guide to achieving inclusive growth on a lasting basis. Some of it is now agreed to even by the human development enthusiasts. And yet it is surprising that the UNDP keeps flogging the dead horse of the HDI versus the growth of per capita income controversy. Indeed, the HDR (2010) has unwisely sharpened it: "Human Development differs from economic growth in that substantial achievements are possible even without fast growth" (p. 5).[24] As a matter of fact, this is true; but it need not imply that pursuing the former is in some essence superior to the latter on the ground that achieving convergence with the West in terms of HDI is easier than in terms of growth of per capita GDP. As noted above, the focus should simultaneously be on achieving a creative symbiosis of the growth, equality and poverty reduction strategies within the framework of pluralistic political

[24]While HDR (2010) duly recognises the role of growth of income, yet it never recommends highest possible growth as a policy objective, or even as a means of achieving the desired capability expansion. For the latter it continues its emphasis on spending more on the non-income elements of HDI (p. 6).

institutions that allow for decentralised deliberation and public reason, not just to have public balloting.[25] Broadly, the improvements in the average standard of living should be combined with enhancing the quality of social justice (or minimising social injustice), especially for the least-privileged in the society. The best way to do this is to abandon the vain search for one comprehensive indicator of human well-being, per capita GDP included. The proper thing to do is to evolve a framework that continues to use a revised GDP metric as a measure of market activity and then supplements it with additional information about the net changes in the quality of life of the people.[26] Indeed, as pointed out above, this is what the pioneers of development economics also recommended, though not so precisely in statistical terms. The net improvement on that position should be the addition of a wealth of new statistical information about the quality of life and a solid philosophical base to be able to make correct moral claims about the requirements of social justice, which the UNDP programme provides.

IX. RAINBOW'S END

It follows from the preceding analysis that the correct strategy to achieve inclusive growth is to restore the time-tested development policies that have brought prosperity to the teeming millions in a short time—for several decades consistently. That would require promoting high rates of saving to finance the required investment in physical and human capital. Keeping with the tradition of Industrial Revolution, the developing countries, depending on their stage of development now, must be allowed to practise and subsidise import-substitution activity when needed—especially to find new areas of comparative advantage over the long haul. The fastest possible growth rates would require the smoothest possible process of Structural Transformation, which can be called as the Fundamental Law of Economic Development, both in the developed and the developing countries. However, this statement is subject to three important qualifications. Firstly, the statement above does *not* say that import substitution should be the *only* policy instrument to be used for encouraging industrialisation, to the exclusion of export substitution. *It should be both*. In other words, the argument here is not for an inward-looking strategy, such as probably was the case in Latin America in the second phase of its development. An open economy provides the right setting for fast and stable growth. Development experience has rejected export fetishism and as well as all-out import substitution. Indeed, as noted above, the aim should be to increase the share of exports in

[25]The qualification in the text is important. As opposed to the traditional definition of democracy in terms of annual elections and free public balloting, the modern focus is on the content of democracy---that is what Rawls calls 'the exercise of public reason'. He states clearly: "The definitive idea of democracy is the idea of deliberation itself. When citizens deliberate they exchange views and debate their supporting reasons concerning political questions" [cited in Sen (2010), p.324)]. Thus, on this definition even the municipal councils or similar institutions that allow for extensive discussion and public questioning of the political institutions qualify as democratic institutions even where elections don't take place. This is however not an argument against elections which are of vital importance in themselves.

[26]This is also one of the key messages of the Report of the Commission the Measurement of Economic Performance and Social Progress: "These measures [about the quality of life], while not *replacing* economic indicators provide an opportunity to *enrich* the discussions and to inform people's views of the conditions of the communities where they live" . [Stiglitz, Sen, and Fitoussi (2012), p. 62]. The italics are in the original]. With this position no reasonable person can differ.

GDP by diversifying so as to be able to import more to finance growth requirements; but it is not to practise some kind of protectionism. What is being suggested is that the set of development-oriented policies should not be artificially narrowed by crowding out import-substitution activities as economically sinful *per se*, because that would forestall long run growth and employment generation. Secondly, it also does not say that the *form* of import substitution should remain the same as in the past, irrespective of the stage of development reached—it should gradually transition from simple manufacturing activities to more sophisticated activities based on science and technology, *while at the same time make provision for capital accumulation to sustain this process.* Protection should be removed from industries that have outgrown their infancy; and those which cannot sustain without protection, even after enjoying years of protection should be phased out.[27] Thirdly, the *form* of protection should also change keeping in view what is to be protected. It need not be import controls or differential exchange rates; it could take the form of subsidies given per unit of labour input, for instance.[28] The aim should be to expand the domestic market so that growth does not come to rely on exports alone. Yet there should be no confusion that industrialism must be in the driver's seat and *that it is only by achieving high rates of economic growth that inequality can be redressed without creating much social tension and poverty reduced dramatically on an irreversible basis.*[29] The aim of development policy should be to achieve and sustain high rates of growth of per capita income—say 6 percent to 7 percent—for several decades, duly supplemented by social safety nets and by universalising access to education, including higher education [Naqvi (1995); World Bank (2008); Naqvi (2010); Spence (2011)]. And to this end, industrialism, duly supported by a vibrant agricultural sector, should form the basic plank of a successful development policy. This is the *only* way to achieve inclusive growth on a sustainable basis.

Following this historically correct path, some developing countries have already achieved the high-income status (like Japan, South Korea, and Singapore) and some others (China for example) are in the middle-income status within three decades, while others are poised to escape low-income vicious circle of poverty. The liberalist obsession with keeping inflation and budget deficit artificially low even at the cost of slow growth and rising unemployment must be done away with, both on moral and economic grounds; and if only because slow growth and rising unemployment form a toxic combination that will undermine democratic societies.[30] Enforcing financial and monetary discipline is not

[27]The success of South Korea's great achievement is also due to this vigilance of the type of industries that need protection; and those which do not. This aspect has been discussed at length in World Bank (2008) and Spence (2011).

[28]There is a whole body of literature on the optimal forms of intervention in the presence of domestic distortions. This literature has been comprehensively reviewed in Bhagwati and Ramaswami (1963); Naqvi (1969).

[29]As opposed to the GATT, which recognised the legitimate needs of the development countries to practice import-substitution activities, the WTO responding to the interests of the West, forbids such activities.

[30]Keynes in commenting on Hayek's book, *Road to Serfdom* which he liked otherwise, remarked: Hitler's rise was "facilitated not by big government but by the failure of capitalism and mass unemployment". He warned that: "if the US in peacetime returned to unemployment rates of the 1930's, then it may lead to political extremism that had drawn the world into war [Wapshott (2012), p. 199]. These warnings are as true today as they were at the time that Keynes made them. Indeed, if an unemployment rate of 9 percent—much lower than 30 percent or so in the Great Depression—can cause unrest in a stable country like the US, what can happen, and is indeed happening in the much weaker developing countries, is not too difficult to imagine.

a matter of implementing certain sure-fire rules that are visible enough to be seen by the naked eye. The experience of developing countries suggests that it is useful to be modest here. That is, the definition and extent of this discipline lie within a large area of deliberate ambiguity, depending on the state of the economy, in particular. And, as Keynes observed long ago, "an unbalanced economy does not produce a balanced budget". The search for the highest per capita growth should also not be sacrificed for the sake of achieving faster convergence in human development. High rates of human development are best achieved on a non-reversible basis when it comes on the back of highest possible growth rates. The long-term aim should be for all or most of the developing countries to move steadily to the high-income status and then compete among themselves and with the Western countries in a non-exploitative relationship—unlike the practices of powerful Western countries in the wake of Industrial Revolution. To generate light and not just heat, the key development debate should not be cast in the futile confrontational posture of this-versus-that—namely, growth versus human development, government versus the market, agriculture versus industry, physical versus human capital formation, factor (input) accumulation versus productivity growth, export expansion versus import substitution, economic development versus human development etc. A successful development policy—indeed, one that has already succeeded to better the lot of the "voiceless millions" has to have some of all of these elements. It should look at these important matters in a "balanced" and practical way, keeping in view the stage of development already reached. Above all, it needs to be supported by an explicit government policy that keeps growth *with* equity as the primary objective of public policy. The element of time is of essence to keep the engine of growth running full throttle.

Yet sustaining growth over long periods requires a strong sense of commitment to collective welfare, away from selfishness and greed focussed narrowly on one's self-interest. To ensure the required supply of commitment, however, equality of opportunity is a must—that is, the state must ensure that all, men and women, get the same starting point in their lives—so that people know that if not they, at least their children and grandchildren, will get a better deal as the economy scales greater heights of economic and social prosperity. Given that, some inequity in the distribution of income can be tolerated for some time, which is inevitable as labour moves from low-productivity rural activities to higher-productivity in manufacturing activities. When the stakes are as high as they are in the developing countries—most of the 9/10th of humankind still being denied an honoured place on the table of successful nations—the unambiguous aim of development policy should be to internalise inclusive growth, where human freedom is incomplete without a compelling sense of sharing the fruits of economic progress with those left behind in the race to prosperity. The doctrine-less individualism, driven by a religious belief in selfishness and greed has done incalculable harm to modern societies. Holding a lantern across unimaginable opulence and abject poverty, development policy must emphasise giving rather than possessing. This is essentially what the search for inclusive growth amounts to.

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Time Poverty, Work Status and Gender: The Case of Pakistan

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The present study measures time poverty and its incidence across gender, occupational groups, industries, regions, and income levels using Time Use Survey (TUS) 2007, the first nationwide time use survey for Pakistan. In the entire TUS sample, the incidence of time poverty is 14 percent. Women are found to be more time poor than men whether employed or not. This is because of certain women-specific activities that they have to perform irrespective of their employment status. Working women are far more time poor than those not working.. Women accepting a job have to make a major trade-off between time poverty and monetary poverty. People working in professions and industries that generally require extended work hours and offer low wage rates are more time poor. This entails a situation of double jeopardy for workers who tend to be money and time poor at the same time. The close association of time poverty with low income found in this study corroborates this conclusion. Government can help reduce time poverty by enforcing minimum wage laws and mandatory ceiling on work hours in industries with high concentration of time poverty. Eradication of monetary poverty can also eliminate the need to work long hours at low wages just to survive. A fair distribution of responsibilities between men and women.is also needed.

Keywords: Time Poverty, Gender Disparities, Time Use, SNA Activities, Time Use Survey, Pakistan

1. INTRODUCTION

Time is a valuable economic resource. It may be spent in a variety of ways, but employed persons spend a significant portion of it in the labour market for monetary gains. They still have other demands on their time resource such as self-care, home production of goods and services and leisure. These demands on time may reach a point where people may be categorised as time poor. In many developing countries including Pakistan, working women may be more time poor than men because of their household responsibilities. Time poverty may also be related to certain occupations and industries where workers have to work longer hours.

The concept of time poverty is not new to economics literature, though the revival of interest in this phenomenon and efforts to measure it empirically are relatively a recent development. Part of the reason for this renewed interest appears to be the availability of

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time use data for a number of countries. The publication of the report on Time Use Survey 2007 (TUS) has added Pakistan to the list of such countries [Pakistan (2009)]. Naturally, the availability of this data has rekindled interest in time use research in Pakistan. The compilation of this dataset has for the first time opened unlimited vistas for research on time use in Pakistan.

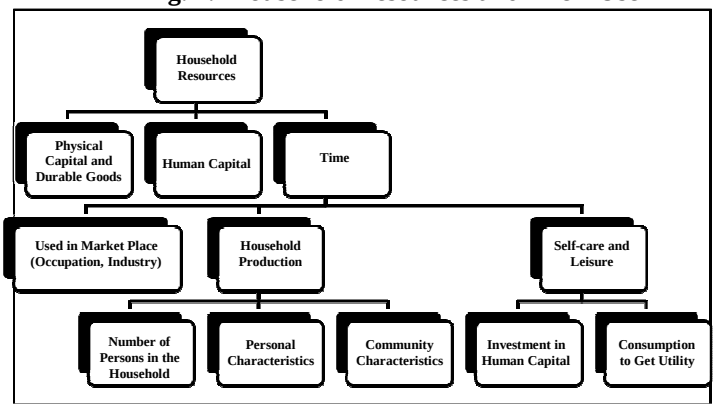
The present study focuses on analysis of the various aspects of time poverty among the employed though, for comparison, it has included the not-working sample as well. The study begins by exploring the analytical framework used to study time poverty in the next section. In Section 3, it describes the dataset and discusses its descriptive statistics. This section also delineates the methodology used in this study and deals with the question of how to empirically estimate time poverty. Section 4 presents the results of the present study. The final section summarises the main findings of this study and in conclusion presents some policy recommendations.

2. ANALYTICAL FRAMEWORK

Defining time poverty is not a straightforward exercise. It is a complex matter that involves a number of theoretical and empirical considerations. Once these issues are clarified, we can move on to the main focus of our study. The incidence of time poverty among the employed itself has multiple dimensions that need to be investigated. Though Vickery's (1977) seminal paper on time poverty is regarded as a major step towards analytically expounding the concept, the antecedents of his work can be found in the classical paper by Becker (1965) who developed a framework that treated time as a household resource that is used as an input in the production of household goods and services.[1] However, it may be recalled that time was recognised by economists as a constrained resource long before Becker's work.

To understand the concept of time poverty, it would be instructive to begin by looking at the resources that can be used to enhance the welfare of a household or an individual. As shown in Figure 1, these resources can be divided into three broad categories, namely, physical capital, human capital and time.

Fig. 1. Household Resources and Their Use



[1]For a more detailed analysis of the economics of time use, see Hamermesh and Pfann (2005).

The role of physical capital is well known. It generates a stream of revenue over its lifetime that adds to household income. Becker (1975) and Mincer (1974) have highlighted parallels between physical and human capital. According to their theory, investment in human capital also generates a stream of income over the lifetime of the individual. Therefore its role in enhancing the welfare of an individual has marked similarities with that of physical capital and can be easily understood by drawing parallels between the two types of capital.

As noted earlier, time is also an important household resource that can be put to a variety of uses. Since Becker's pathbreaking work, the role of time as an input in household production has been well-recognised. The literature on household production postulates that households combine market goods, time, personal and household characteristics along with other inputs to produce household goods and services.[2] Oates (1977) and Hamilton (1983) have extended this approach by showing that community characteristics must also be included as inputs in the household production function. This implies that if there is complementarity between time and other inputs, i.e. if time can be used more efficiently in the presence of the above mentioned inputs in the household production function, then time poverty will also depend on these variables.

Time can be used in self-care and leisure as well. Self-care and leisure may be regarded as utility enhancing consumption activities, but their role in improving human capital cannot be ignored. Spending time in rest, leisure and taking care of oneself makes one more productive. Equally, time spent in productive activities can be used to make leisure more productive because it generates income that can be spent on goods that are complementary to leisure, such as books and television.

In addition, time can be used in the market place to directly generate income. The income thus generated has a direct role with respect to monetary poverty. More interesting for us is the fact that employment increases the time used in committed activities which has strong bearing on time poverty. This raises the spectre of the trade-off between monetary poverty and time poverty. One more layer of complexity is added when we recognise the direct substitutability between time and money. This is evident from the simple fact that time can be bought by hiring the services of other persons or by purchasing time saving devices.

The gender dimension of this issue is important as well. In developing countries, for example, tradition assigns certain activities such as cooking and childcare solely or primarily to women, so that they have to perform these activities even if demand on their time increases as they enter the labour market. If we keep this possibility in mind, the answer to the question whether getting a job makes women better off no longer remains a clear cut yes because now the trade-off between time and monetary poverty as well as personal and social preferences comes into play.

Economists have long recognised poverty as a multifaceted phenomenon, though income based measures of poverty are more commonly known. The United Nations Development Programme and Oxford Poverty Development Initiative have recently formalised the concept of multidimensional poverty into a new poverty index called Multidimensional Poverty Index (MPI).[3] This index takes into account ten measures of deprivation related to health, education and living standards but ignores time poverty,

[2]For an excellent review of literature on home production, see Gronau (1999).

[3]For more detail, see UNDP (2010) and Alkire and Santos (2010).

which is an important dimension of overall poverty. However, overlooking time poverty may lead to an incomplete measurement of overall poverty as it may result in a number of highly deprived people being classified as non-poor. It may also hamper a true understanding of the extent of deprivation of those who are both time poor and income poor.

The above discussion can be summarised into the following points:

- Time poverty is an important aspect of overall poverty because monetary poverty line provides only a partial measure of poverty.
- It is theoretically possible that some persons could be monetarily rich but time poor and vice versa.
- There are theoretical grounds to believe that both the household and community variables are important determinants of time poverty.
- The gender dimension of time poverty is important, especially for developing countries.

3. DATA AND METHODOLOGY

3.1. The Dataset

This study is based on the Time Use Survey (TUS) 2007 sponsored by the Strengthening PRS Monitoring Project of the Ministry of Finance and conducted by the Federal Bureau of Statistics, Government of Pakistan [Pakistan (2009)]. This is the first nationwide time use survey for Pakistan. The survey was conducted from January to December 2007 and covered a cross-section of 19,600 households. It represents both national and provincial levels with rural/urban breakdown. The year-round coverage of the survey was designed to capture seasonal variation in the time use pattern.

While the survey provides useful information about the household and the community, the prized section of the survey is the diary that records all the activities of two selected persons from each household who are ten years of age or older.[4] The activities are recorded over a period of 24 hours. The entire day is divided into 48 half-an-hour slots and each person is asked about the activities he/she was engaged in during each half hour. An elaborate coding scheme is used to classify the activities reported by the respondents. It is the first time that such a detailed account of time used in daily activities has been made available for Pakistan. Some important details of how this data was used in this study and some of its salient characteristics are described below.

The individuals aged 10 years and above, who filled the diary to report their activities during the past 24 hours, form the unit of analysis for this study. These individuals are grouped into two broad categories, working or employed and not-working or not employed. The subsample of 'employed' persons consists of those who have worked for income or profit at least for one hour during the week preceding the survey. This definition is consistent with that used by the Pakistan Bureau of Statistics (PBS). The 'not-working' or 'not employed' subsample is the residual category consisting of both the unemployed and those who are out of the labour force. This type of categorisation has recently been used by Kalenkoski, Hamrick and Andrews (2011) to determine the time poverty thresholds based on pooled data from 2003-2006 American Time Use Surveys (ATUS).

[4]For details of the procedure used to select two individuals from each household, see, Pakistan (2009).

3.2. Sample Characteristics

Since the major objective of this study is the analysis of time poverty of the employed sample by gender and other characteristics related to labour market, it would be instructive to have a brief description of these characteristics. Table 1 shows the socio-demographic characteristics of the total sample as well as for the working and not-working sub-samples separately, while the labour market specific indicators of the employed sample are reported in Table 2, where the relevant figures from Pakistan Labour Force Survey [Pakistan (2010)] have been provided for comparison. Information on monthly income and sources of income is given in Table 3.

Fifty two percent of the total respondents who filled the diary are females. The mean age for the total sample is 31 years and the male sample is on average one year older than the female sample. About 40 percent of the sample is drawn from urban areas and more than half were married at the time of the survey. There is a gender difference in terms of the proportion living in urban areas and the marital status, but it is relatively small (Table 1).

Table 1

Sample Characteristics

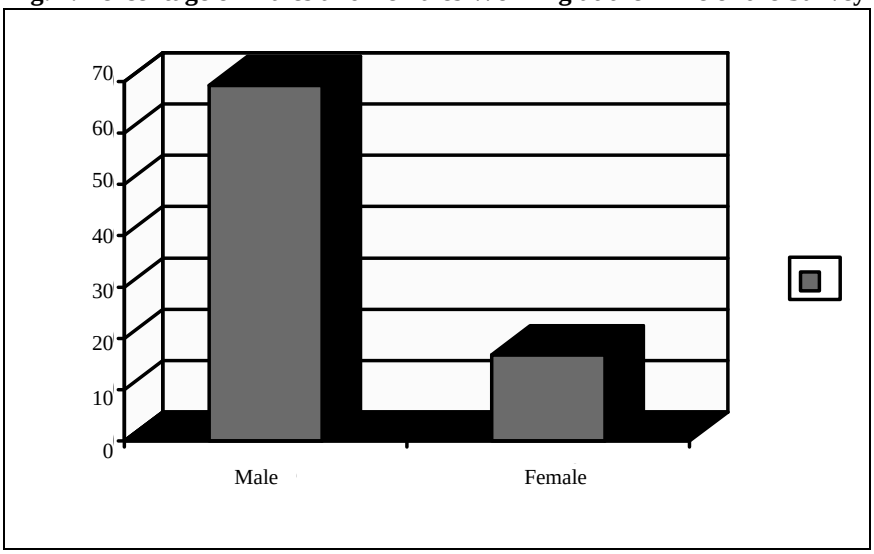
	Total Sample			Not-working/Not Employed			Employed		
Sample	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
% Female	–	–	51.6	–	–	74.3	–	–	20.5
Mean Age (Years)	30.9	31.4	30.4	28.4	23.7	30.1	34.3	34.9	32.0
% Urban	39.4	40.5	38.4	42.2	45.2	41.1	35.7	38.4	25.0
% Rural	60.6	59.5	61.6	57.8	54.8	58.9	64.3	61.6	75.0
Marital Status									
Currently Married	56.6	53.4	59.7	41.7	16.8	58.3	68.9	69.6	66.5
Unmarried	39.2	44.1	34.5	47.2	79.8	35.9	28.2	28.3	27.6
Others	4.2	2.5	5.7	5.1	3.4	5.7	2.9	2.1	5.0
All	100	100	100	100	100	100	100	100	100
(N)	(37832)	(18321)	(19511)	(21871)	(5630)	16241)	(15961)	(12691)	(3270)

Source: Calculated from the micro-data of Time Use Survey, 2007.

Figure 2 shows the percentage of males and females working at the time of the survey. Whereas more than two-thirds of the males were found working at the time of the survey, the corresponding figure for the females was only 17 percent. Consequently, while three-quarters of the not-employed sample consists of females, their proportion among the employed sample is only one-fifth (Table 1).

Another noteworthy gender difference among the not-working persons is in their marital status. Table 1 shows that approximately 60 percent of the not-working females are in the 'currently married' category as compared to only 17 percent for the males. This gap is much narrower and in opposite direction among the employed persons, the two figures being 67 percent and 70 percent for women and men respectively. The overwhelming majority of the employed females (about 75 percent) live in rural areas, while this figure for the not-working women is about 60 percent.

Fig. 2. Percentage of Males and Females Working at the Time of the Survey



Source: Calculated from the micro-data of Time Use Survey, 2007.

One of the reasons for the higher percentage of working women living in rural areas appears to be their substantially higher representation among agricultural workers (48 percent as compared to 29 percent men; Table 2). Within the employed sample, the majority of females fall in three occupation groups—agriculture workers (48 percent), craft workers (19 percent), and unskilled (elementary) workers (18 percent). Only 15 percent women are professional or associate professional workers. Employed males are engaged in four major occupational categories: agriculture (29 percent) professionals and associate professionals (24 percent), elementary work (21 percent) and, craft and machine work (18 percent). In terms of industrial classification, women are concentrated in agriculture, manufacturing and, community and social service sectors. In addition to these three sectors, the employed males have a substantial representation in the trade sector as well (Table 2).

Table 2 also shows that employment status of 46 percent of the employed males is reported as 'employee', while the corresponding figure for women is 39 percent. The most pronounced gender difference in employment status is found in the 'unpaid family helper' and 'self-employed' categories. Compared to just 10 percent of the males, around half (47 percent) of the females are unpaid family workers. On the other hand, 39 percent of males are self-employed as compared to only 14 percent of females.

Three labour market characteristics of the TUS employed sample are also compared in Table 2 with the LFS employed sample. While most of the TUS and LFS figures are fairly close to each other, there are three noteworthy differences between these datasets. One, LFS shows a higher representation of females among agriculture workers as compared to TUS while in case of female craft workers and machine operators' TUS figures are larger. Two, among industries, LFS reports a higher percentage of women in agriculture as compared to TUS data, whereas TUS figures are higher for women working in the manufacturing sector. Three, the percentage of unpaid family helpers in

Table 2

Labour Market Characteristics of the Employed Sample

Labour Market Characteristics (Percentages)	Working/Employed Sample					
	Both Sexes		Male		Female	
	TUS*	LFS**	TUS*	LFS**	TUS*	LFS**
Occupation						
Professionals	15.4	14.2	18.4	17.1	3.8	2.6
Associate Professional	6.6	5.3	5.5	5.0	10.9	6.6
Clerks	1.5	1.6	1.8	2.0	0.3	0.2
Service and Workshop	5.2	4.9	6.4	6.0	0.8	0.6
Agricultural Worker	33.0	37.4	29.3	31.3	47.5	60.9
Craft Workers	14.2	15.2	13.0	16.1	19.1	11.8
Machine Operators	4.0	4.0	5.1	5.0	9.1	0.2
Elementary (Unskilled) Occupation[a]	20.0	17.4	20.7	17.5	17.5	17.1
Industry						
Agriculture	39.7	44.6	35.3	36.9	57.0	75.0
Manufacturing	12.8	13.0	10.8	13.3	20.3	11.8
Electricity	0.8		1.0		0.1	
Construction	6.9	6.3	8.7	7.8	0.2	0.4
Trade	14.8	14.6	19.1	17.9	2.2	1.8
Transport	5.1	5.5	6.4	6.8	0.3	0.2
Finance	1.8		2.2		0.3	
Community and Social Services	17.6	15.7	17.1	14.4	19.5	10.6
Undefined	0.3	2.3	0.4	2.9	0.1	0.2
Employment Status						
Employees	44.2	36.0	45.7	36.0	38.5	22.2
Self-employed	34.0	34.2	39.2	39.6	13.7	12.8
Unpaid Family Helpers	17.9	28.9	10.4	19.7	47.2	65.0
Employers	3.9	0.9	4.8	1.2	0.6	–
(N)	(15961)	–	(12691)	–	(3270)	–

Source: *TUS: Calculated from the micro-data of Time Use Survey, 2007.

**LFS: Figures for fiscal year 2007-08 taken from Pakistan Labour Force Survey 2008-09.

a: Elementary occupation includes unskilled workers such as street vendors, cleaners, domestic helpers, and labourers in construction, agriculture, and mining sector.

the TUS is lower than that in the LFS. An important procedural difference also exists between the two. The TUS has used female enumerators to report the activities of female respondents, while this task is performed by male enumerators in the LFS. Therefore, it may be argued that the reporting of female activities is more reliable in the TUS.

The gender difference in employment status reflects itself in the monthly income statistics too (Table 3). More than 43 percent of the employed women reported no monthly income,[5] whereas 45 percent of them were earning a monthly income of Rs 4000 or less. This contrasts sharply with the corresponding figures for the employed males. Among them, the proportion without any monthly income was only 8 percent while approximately 60 percent of them were earning more than Rs 4000 per month. Wages and salaries, and business are the major sources of monthly income for both the employed men and women.

[5] These women are primarily unpaid family helpers.

Table 3

Distribution of the Employed Sample by Monthly Income and Sources of Income (Percentages)

Income and Sources of Income	Both Sexes	Male	Female
Upt to Rs 2000	15.1	9.8	35.6
2001-3000	9.4	10.3	5.7
3001-4000	12.5	14.8	3.6
4001-5000	11.3	13.7	2.2
5001-6000	8.6	10.3	2.0
6001-7000	6.3	7.5	1.7
7001-8000	4.7	5.6	1.2
8001-9000	3.2	3.8	0.9
9001-10,000	2.9	3.4	0.9
10,000 or More	9.8	11.6	2.9
Don't Know/Refusal	1.3	1.4	0.8
No Income[a]	14.8	7.7	42.6
Sources of Income			
Wages and Salaries	44.2	45.5	38.8
Business	37.0	43.1	13.1
Transfer Income	3.2	2.7	5.0
Other	0.9	1.0	0.4
No income[a]	14.8	7.7	42.6
All	100	100	100

Source: *TUS: Calculated from the micro-data of Time Use Survey, 2007.

**LFS: Figures for fiscal year 2007-08 taken from Pakistan Labour Force Survey 2008-09.

a: These are unpaid family helpers.

The differences in the characteristics of working and not-working women in terms of age and schooling are presented in Appendix Table 1. It shows that the share of teenagers (10–14 years old) is greater (17.7 percent) among the not-working women sample as compared to the working sample (7.4 percent). Approximately two-thirds of the working women are in their prime age, that is, 15–39 years, while the corresponding share for the not-working sample is 56 percent. The proportion of aged women among the not-working sample is modestly higher (8.4 percent) than among the working sample (4.9 percent). In terms of education, it is interesting to note that the not-working women sample appears to be more literate than the working women sample. However, the share of degree holders is relatively greater among the working women.

In short, this description of the characteristics of the employed and not-employed sample of the 2007 TUS by rural-urban classification shows a great deal of variation in their demographic profile and economic activities, which are likely to be closely associated with their time use patterns and time poverty.

3.3. Methodology

This study proceeds in two steps. The first step consists of an examination of the time use pattern of the respondents by the type of activities as classified in the TUS 2007. The focus has been on differentials in time use pattern by gender, region, work status, and other

labour market indicators. The TUS 2007 organises activities of the respondents in three broad categories, namely, System of National Accounts (SNA) activities, extended SNA activities, and non-SNA activities. The SNA activities consist of employment for establishments, primary production activities not for establishments, like crop farming, animal husbandry, fishing, forestry, processing and storage, mining and quarrying; secondary activities like construction, manufacturing, and activities like trade, business and services. Extended SNA activities include household maintenance, care for children, the sick and the elderly and community services. The activities related to learning, social and cultural activities, mass media and personal care and self-maintenance constitute Non-SNA activities.

To proceed to the second stage of the study, which deals with various aspects of time poverty as discussed in Section 1, it is inevitable to operationalize the concept of time poverty. What we need is a working definition of time poverty that makes it possible to estimate a time poverty threshold using our dataset. The estimated threshold can then be used to classify people either as time poor or non-poor. This objective can be achieved by using a methodology that is similar to that used for estimating monetary poverty.

The first thing that needs to be decided in this regard is whether to use an absolute or a relative measure of poverty. Both measures are common in the literature on monetary poverty, though the choice of an absolute measure is a bit more arbitrary. Often a certain level of per adult calorie intake equivalent based on "minimal" calorie requirements is taken as the poverty threshold. Unfortunately, things get more difficult in case of time poverty as there is no agreed level of "minimal" time needed by a person to avoid being time poor. Therefore we have to resort to a relative definition of time poverty that involves using some measure of the central tendency (such as mean, median or mode) of time distribution or its multiple as a time poverty cut-off point.[6]

The issue of the choice of a poverty index comes next. We use the headcount index, which gives the proportion of people who are time poor. The results presented using this index are easy to grasp, even by a non-professional. In addition to being simple and straightforward, it belongs to the FGT class of poverty indices that possess certain desirable properties.[7]

Which are the activities that make people time poor if they exceed a predetermined limit is another question that has to be dealt with. While it is easy to exclude activities such as leisure and vacationing from this list, much more thinking is needed to decide on the activities that belong to it. The literature on time use describes these activities in such terms as "necessary or committed activities" and time spent in these activities as "non-free minutes" [Kalenkoski, *et al.* (2007)]. The activities to which an individual has committed as his economic or social responsibility may be regarded as necessary activities and time spent in these activities may be counted as non-free minutes contributing to his/her time poverty [Kalenkoski, *et al.* (2011)]. Thus, the figures of non-free minutes (time spent on committed activities) hence obtained can then be used for defining time poverty threshold(s) and calculating time poverty.

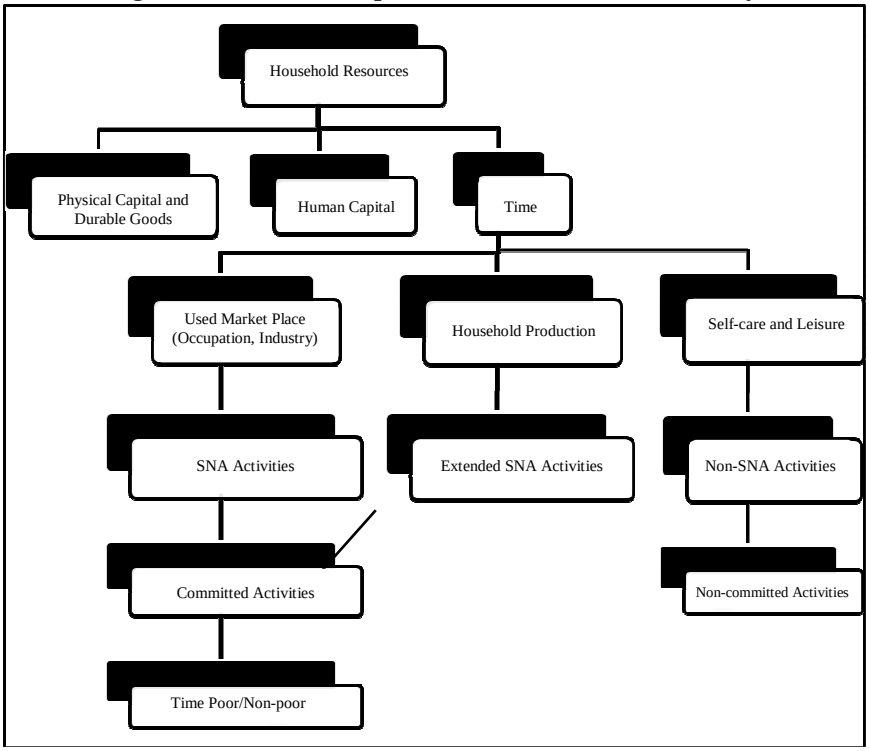
As noted above, the time use survey data organises activities performed by the respondents in three broad categories, namely, SNA, extended SNA, and non-SNA activities. A careful scrutiny of the list of the activities falling under each of the three broad categories, as reported at the beginning of this section, reveals that the first two

[6]This definition is relative with respect to different time distributions and must not be confused with the measures of relative poverty that take into account the wellbeing of other people in the neighbourhood.

[7]For more detail on FGT indices of poverty, see Foster, Greer and Thorbecke (1984).

categories consist of what we may safely call committed activities. For instance, the major activities included in the SNA, such as employment, production, trade and business activities, are considered 'committed' because these activities are directly related to the livelihood and economic wellbeing of working persons and their households, and they have committed to perform these activities in exchange for monetary or other economic benefits. Similarly, some social responsibilities which are essential for the welfare of household members such as care for children, the sick and the elderly are also categorised as committed activities, as they must be performed as a social obligation. These activities are part of the extended SNA activities. Therefore we add time spent by the respondent in SNA and extended SNA activities to calculate the total time spent by her/him in committed activities. Figure 3 shows the link between the concept and the empirical definition of time poverty as discussed above.

Fig. 3. Towards an Empirical Definition of Time Poverty



A poverty line or threshold that is used to calculate the headcount index is often defined as a multiple of the median of the non-free time of an individual. In the absence of an agreed cut off point for time poverty based on sound theoretical grounds, the only option left is to follow a threshold level commonly used by previous empirical studies of time poverty. Following Lawson (2007) and Bardasi and Wodon (2006), this study uses 1.5 times the median time spent in SNA and extended SNA activities as the time poverty line. Based on this methodology, the time poverty line is computed as 10.5 hours (630 minutes). The time poor are those who have spent more than 10.5 hours in a day on the

committed activities (SNA+ex-SNA).[8] In other words, persons who work 63 hours in a week are deemed to be time poor.

However, it can be argued that the value of 10.5 hours used in this study as the poverty line is an arbitrary cut-off point. A natural question then would arise that what difference would it make if a higher or a lower cut-off point was chosen as poverty line. In the absence of well-established practices to measure time poverty, alternative poverty lines have commonly been used in the literature [Bardasi and Woden (2006)]. Following this practice, two alternative poverty lines have also been used in the analysis; 9 hours as a lower cut-off point and 12 hours as a higher cut-off point.

4. RESULTS

4.1. Time Use

Table 4 sets out data on the time use patterns for the full sample as well as working and not-working subsamples separately, controlling for gender and rural-urban areas. The male sample that filled the diary spent on average 5 and a half hour a day in SNA activities. In contrast, the female sample spent 5 hours in ex-SNA and only 1 hour and 15 minutes in SNA activities. Men spent about half an hour more in non-SNA activities as compared to women.

Table 4

Mean Time Spent (Hours:Minutes) on Different Activities by Work Status, Gender and Rural/Urban

	Total Sample			Employed Only			Not-working		
Sample	SNA	Ex.SNA	Non-SNA	SNA	Ex.SNA	Non-SNA	SNA	Ex.SNA	Non-SNA
Total Sample									
All	03:15	02:55	17:50	06:58	01:22	15:40	00:32	03:54	19:34
Male	05:21	00:32	18:07	07:32	00:32	15:56	00:24	00:32	23:04
Female	01:15	05:10	17:35	04:42	04:39	14:39	00:34	05:16	18:10
Rural Areas									
All	03:25	03:03	17:32	06:44	01:34	15:42	00:44	04:16	19:00
Male	05:27	00:31	18:02	07:22	00:32	16:06	00:34	00:29	22:57
Female	01:35	05:21	17:04	04:41	04:52	14:27	00:48	05:27	17:45
Urban Areas									
All	02:58	02:43	18:19	07:22	01:02	15:36	00:14	03:46	20:00
Male	05:13	00:33	18:14	07:49	00:32	15:39	00:13	00:35	23:12
Female	00:44	04:52	18:24	04:44	03:59	15:17	00:16	04:58	18:46

Source: Calculated from the micro-data of Time Use Survey, 2007.

Some more details emerge as we look at the time use statistics separately for the working and the not-working sample. In the not-working sample, both males and females spent an average of around half an hour in SNA activities. The real gender difference is observed in the remaining two categories. On ex-SNA activities, the not-working male sample spent only half an hour as compared to more than 5 hours spent by the not-working females. The not-working men spent about 5 hours more than women in non-SNA activities.

[8]Using same methodology, Bardasi and Wodon (2006) have reported a time poverty line of 70.5 hours per week for Guinean adults (age 15 years and older).

The employed males spent 7 and a half hours in SNA activities while the corresponding time for the female sample was less than 5 hours. On ex-SNA activities, the employed males spent an average of only 32 minutes in 24 hours whereas the female sample used up, on average, 4 hours and 39 minutes of their day on these activities. The gender gap in the employed sample in the time spent in non-SNA activities was substantially smaller as compared to that in the not-working sample.

A comparison of the time use pattern of the working, and not-working samples reveals that employed males spend almost the same small amount of time (32 minutes) in ex-SNA activities in both cases. In contrast, despite having to work around 5 hours a day in the labour market, the women's lot in terms of shouldering the responsibility of ex-SNA activities is not changed substantially after accepting employment. The time spent by them in ex-SNA activities is reduced, on average, from 5 hours and 16 minutes to 4 hours and 39 minutes, a gain of just 37 minutes. This lends credence to the view that some activities in the developing countries are considered to be women specific which they have to perform, whatever else they may or may not be doing.

The overall result is that women end up working more hours than men whether they accept paid work or not. Not-working women spend about 5 more hours in SNA and ex-SNA activities combined as compared to not-working men. This gender gap persists in the working sample, though it is reduced to 1 hour and 16 minutes. Men also have more free time that they spend in non-SNA activities in both the cases though this gender gap is much smaller in the working sample.

While the time used in SNA and ex-SNA activities by the males is almost the same in both rural and urban areas, women living in rural areas spend more time on both the types of activities as compared to those living in urban areas. They also have less time available to them for non-SNA activities as compared to their urban counterparts. This rural-urban divide in the time spent by women in SNA and ex-SNA activities combined on the one hand and non-SNA activities on the other prevails both among working and not-working sample, though the gap is much wider among the working women. A working woman living in the rural area spends, on average, more than double the time in SNA and ex-SNA activities as compared to a woman living in the urban area.

Tables 5–7 show the time use data by three labour market indicators of the employed sample, namely the occupational class, industry and employment status, and gender and rural-urban areas. Service workers and plant/machine operators, who mostly work in the informal sector,[9] spent on average 8 and a half hours in SNA activities, approximately 2 hours more than the time spent in SNA activities by professional and clerical workers. The latter usually work in the formal sector where the number of working hours is fixed, whereas those employed in the informal sector usually work longer hours. This difference persists in rural as well as urban areas. Male workers spent on average more time in SNA activities than their female counterparts in all occupational categories. Moreover, male professional and agricultural workers had relatively more free time than the workers in other occupations.

[9]The Labour Force Survey defines the informal sector on the basis of the type of enterprise and the number of persons working in the enterprise. The TUS 2007 reveals that the service workers and plant/machine operators are primarily engaged in the informal sector.

Table 5

Mean Time Spent on Activities by the Employed Sample by Their Occupation

	SNA			Ex-SNA			Non-SNA			Male			Female		
Occupation	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	SNA	Ex-SNA	Non-SNA	SNA	Ex-SNA	Non-SNA
Managers	08:34	08:15	08:04	00:39	00:34	00:32	14:47	15:11	15:24	08:23	00:26	15:11	04:38	04:09	15:13
Professionals	06:23	06:12	06:07	01:06	01:04	01:04	16:31	16:44	16:49	06:27	00:48	16:45	04:31	02:53	16:36
Ass. Professionals	05:26	05:31	05:34	01:47	01:47	01:47	16:47	16:42	16:39	06:08	00:43	17:09	04:38	03:31	15:51
Clerk	06:49	06:56	07:00	00:39	00:41	00:42	16:32	16:23	16:18	06:58	00:35	16:27	04:28	03:02	16:30
Service Workers	08:28	08:28	08:28	00:30	00:35	00:39	15:02	14:57	14:53	08:34	00:29	14:57	05:11	03:42	15:07
Agri-workers	06:03	06:02	05:45	01:56	01:56	01:55	16:01	16:02	16:20	06:45	00:32	16:43	04:21	05:16	14:23
Craft Workers	06:31	06:50	07:09	02:09	01:45	01:21	15:20	15:25	15:30	07:51	00:32	15:37	04:11	04:57	14:52
Plant and Mach-Operator	08:27	08:34	08:42	00:28	00:27	00:26	15:05	14:59	14:52	08:34	00:27	14:59	08:15	02:14	13:31
Elementary Occup.	07:28	07:34	07:44	01:05	01:03	01:00	15:27	15:23	15:16	07:49	00:33	15:38	06:23	03:25	14:12

Source: Calculated from the micro-data of Time Use Survey, 2007.

Table 6

Time Spent by Industry

	Total			Rural			Urban			Male			Female		
Industry	SNA	Ex-SNA	Non-SNA	SNA	Ex-SNA	Non-SNA	SNA	Ex-SNA	Non-SNA	SNA	Ex-SNA	Non-SNA	SNA	Ex-SNA	Non-SNA
Agriculture	06:15	01:49	15:56	06:15	01:50	15:55	06:04	01:43	16:13	06:52	00:30	16:38	04:45	04:59	14:16
Manfu.	06:49	01:55	15:16	06:24	02:28	15:08	07:10	01:26	15:24	08:02	00:31	15:27	04:16	04:50	14:54
Elect. Gas	06:30	00:42	16:48	06:21	00:41	16:57	06:34	00:42	16:44	06:26	00:40	16:54	08:00	03:10	12:50
Constr.	07:44	00:36	15:40	07:44	00:37	15:39	07:44	00:34	15:42	07:45	00:35	15:40	04:41	03:47	15:32
Trade	08:38	00:30	14:52	08:46	00:33	14:41	08:32	00:28	15:00	07:04	00:23	16:33	05:20	04:04	14:36
Transport	08:24	00:36	15:00	08:15	00:38	15:07	08:33	00:33	14:54	08:25	00:34	15:01	06:52	02:40	14:28
Finance	07:28	00:33	15:59	07:26	00:30	16:04	07:29	00:33	15:58	07:26	00:32	16:02	08:37	01:08	14:15
Com. Social. Ser	06:30	01:22	16:08	06:30	01:20	16:10	06:28	01:24	16:08	07:00	00:42	16:18	04:47	03:39	15:34

Source: Calculated from the micro-data of Time Use Survey, 2007.

Table 7

Time Spent (Hours:Minutes) by Employment Status

	Both Sexes			Males			Female		
Employment Status	SNA	Ex. SNA	Non-SNA	SNA	Ex. SNA	Non-SNA	SNA	Ex. SNA	Non-SNA
Employee	07:18	01:11	15:31	07:44	00:33	15:43	05:20	04:04	14:36
Self-employed	07:21	00:52	15:47	07:36	00:33	15:51	04:25	04:27	15:08
Unpaid Family Helper	05:07	02:59	15:54	06:09	00:23	17:28	04:15	05:12	14:33
Employer	08:13	00:31	15:16	08:20	00:25	15:15	04:30	03:27	16:03

Source: Calculated from the micro-data of Time Use Survey, 2007.

In terms of industrial classification, workers engaged in trade, transport and construction sectors spent more time in SNA activities than those working in other sectors. This pattern of time use is not influenced much by gender or region.

Overall, the female unpaid family helpers spent 3 hours more in a day on committed activities than the male unpaid family helpers. The situation of women working as employees or self-employed was not much different. Unpaid family helpers spent less time on committed activities than the other three categories of workers. However, a glance at the gender distribution of time reveals that female unpaid family helpers spent a lot more time in ex-SNA activities than their male counterparts (more

than 5 hours vs. only 23 minutes). This resulted in female unpaid family workers spending more time in committed activities than any of the remaining three groups of workers.

It is worth focusing on women who spent some time in SNA activities (Table 8). On average these women spent more than 3 hours with virtually no difference in rural and urban areas. However, there was significant difference in this regard between the working and not-working women. In urban areas, the former spent an average of 5 and a half hours in SNA activities while the latter used only one hour and 41 minutes. The working rural women spent on average 5 hours in SNA activities as compared to 2 hours and 10 minutes used by the not-working sample. Overall, working women give considerable time to their labour market activities.

It appears from these simple statistics on the time use pattern that in Pakistan (rural and urban areas alike) the participation of women in the labour market does not reduce their time commitment for ex-SNA activities. Males spend little time in ex-SNA activities, which, in Pakistani culture, appear exclusively to be for females. Although women spend much less time than men in SNA activities, their overall time spent on committed activities (SNA+ ex-SNA) is greater than the time spent by their male counterparts in these activities.

Table 8

Time Spent (Hours:Minutes) by Women in SNA Activities

	Urban	Rural	Total
Working	05:29	04:56	05:04
Not-working	01:41	02:10	02:03
Total	03:14	03:16	03:15

Source: Calculated from the micro-data of Time Use Survey, 2007.

4.2. Time Poverty

The time use patterns of both the working and not-working samples are reflected in the time poverty statistics. The last row of the first panel of Table 9 indicates that, based on a 10.5 hours a day poverty line, time poverty is 14 percent for the entire TUS sample. As expected, the employed people (male as well as female) are more time poor than those in the not-working category, mainly because the latter, in general, did not spend time in SNA activities (see discussion in the previous section). This difference is quite large in both urban and rural areas. Time poverty is substantially higher among not-working as well as working women as compared to men in the respective categories. Working women are hugely more time poor as compared to the not-working women (36.8 percent versus 10.2 percent respectively). This raises the question whether getting a job is a bane or bliss for women. The answer depends on the resulting trade off between monetary and time poverty and its valuation by women. Moreover, if time poverty is computed from the time used for the SNA activities only, the incidence of poverty among women is negligible, less than 2 percent.

In urban areas, 12.3 percent people are time poor, while for the rural areas this figure is 15 percent. Time poverty in rural areas is higher among females than males.

The opposite is true for urban areas. Within the employed sample, 22.5 percent people are found time poor, with no major difference between rural and urban areas. However, time poverty among the employed female sample is double the time poverty among the corresponding male sample. The difference in rural areas is around two and a half times. In urban areas, although more females are time poor than males, the difference is just 5 percentage points. As noted earlier, it is due to the fact that female participation in the labour market brings hardly any change in their time allocation for activities related to household maintenance, care of children and the elderly.

The second and third panels of Table 9 present results for two alternative poverty lines; one with a lower cut-off point of 9 hours per day and the other with a higher cut-off point of 12 hours per day. As expected the two poverty lines lead, respectively, to higher and lower estimates of time poverty, though the general pattern of time poverty across various categories remains generally the same. The change in time poverty due to change in cut-off point is substantial, for example, increasing cut-off point to 12 hours per day brings down time poverty levels to almost negligible in most of the categories, while a decrease in the cut-off point to 9 hours per day increases considerably the time poverty of both males and females.

Table 9

% Time Poor by Work Status, Gender and Rural-Urban Areas

	Working/Employed			Not-working/Not-employed			Total Sample		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Poverty line = 10.5 hours per day									
Urban	23.2	22.4	27.9	5.6	0.5	7.6	12.3	14.9	9.8
Rural	22.2	16.6	39.8	9.2	0.5	12.1	15.0	12.1	17.7
Total	22.5	18.9	36.8	7.7	0.5	10.2	14.0	13.2	14.7
Poverty line = 9.0 hours per day									
Urban	44.7	44.3	46.9	13.2	0.9	18.0	25.2	29.4	21.1
Rural	42.1	36.1	61.2	20.1	1.1	26.2	30.0	26.2	33.4
Total	43.0	39.3	57.6	17.2	1.0	22.8	28.1	27.5	28.7
Poverty line = 12.0 hours per day									
Urban	8.7	8.2	11.5	1.7	0.1	2.3	4.4	5.4	3.3
Rural	8.6	5.7	17.8	2.9	0.1	3.8	5.5	4.1	6.7
Total	8.6	6.7	16.2	2.4	0.1	3.2	5.0	4.6	5.4

Source: Calculated from the micro-data of Time Use Survey, 2007.

It would be interesting to compare the results reported above with the time poverty estimates for some other countries. Bardasi and Wodon (2006) report an overall time poverty rate of 17.6 percent for Guinea, whereas the corresponding figures for men and women are 9.5 percent and 24.2 percent respectively. The overall time poverty rate estimated by Lawson (2007) for Lesotho is 7.9 percent, while 8.3 percent men and 6.8

percent women are reported to be time poor. So, time poverty in Pakistan, based on a 10.5 hours per day cut-off point, is lower than in Guinea but higher than in Lesotho.

In Pakistan, only a few studies have estimated the money-metric poverty incidence across the occupational groups. The general conclusion of these studies is that the level of poverty is higher among unskilled (elementary workers), skilled and service workers than that among other occupational categories.[10] The time poverty data presented in Table 10 show higher incidence of time poverty among services workers, machine operators and workers in elementary occupations than among the clerical, professional and agriculture workers. This implies that unskilled and skilled workers along with the service workers are at the receiving end of both monetary and time poverty.

Table 10

Incidence of Time Poverty (% Poor) by Occupation (Employed only) and Industry

Occupation/Industry	All Areas			Rural Areas	Urban Areas
	Both	Male	Female		
Occupation					
Manager	27.9	27.8	39.4	32.2	25.5
Professional	12.5	12.8	11.1	14.4	11.7
Associate Professional	12.8	9.4	19.4	12.2	13.1
Clerks	10.0	9.6	20.4	11.3	9.4
Service Worker	33.6	34.1	19.2	33.0	34.1
Agriculture	18.5	9.3	40.5	18.5	19.9
Craft Worker	24.3	20.1	35.3	26.5	22.1
Machine Operator	32.7	32.6	59.9	31.6	34.0
Elementary	23.6	20.6	43.2	24.3	25.2
All	22.5	18.9	36.8	22.2	23.2
Industry					
Agriculture	19.5	10.0	42.3	19.4	21.4
Manufacturing	27.7	22.4	24.9	31.5	23.4
Electricity	13.8	12.6	66.7	18.2	11.6
Construction	17.6	17.5	33.3	17.6	17.5
Trade	32.0	31.9	27.5	34.3	30.6
Transport	32.4	32.3	40.0	32.9	31.8
Finance	16.9	16.7	22.2	12.5	17.7
Services	18.1	16.7	22.9	18.4	17.9
All	22.5	18.9	36.8	22.3	23.2

Source: Calculated from the micro-data of Time Use Survey, 2007.

[10]See Jafri (1999) and Qureshi and Arif (2001).

In the male employed sample, time poverty is less than 10 percent among the associate professionals, clerical workers and agriculture workers, whereas one-third of the service workers and plant/machine operators are time poor. The incidence of time poverty among females is much higher than that among their male counterparts in all categories of occupations except professional and service workers. A noteworthy point is that approximately half of the employed women in elementary, skilled and semi-skilled occupations are time poor. These differences in time poverty across occupations persist in rural as well as urban areas. The case of female agriculture workers is interesting. Table 10 shows that 41 percent of these women are time poor whereas only 9 percent of their male counterparts fall in this category.

Table 10 also shows the data on time poverty across the type of industry where the sampled workers were employed. High incidence of time poverty was observed in trade, transport and manufacturing sectors for both male and female workers. In the agriculture sector, time poverty among women was four times higher than that among men. It corroborates the time poverty data across the occupational categories discussed above.

One important lesson from the analysis of the time poverty data across the occupational and industrial classification is that low paid occupations and sectors get more time of the workers. So these workers are poor in money-metric terms as well as in terms of time use. They work for longer hours and get low wages, insufficient to sustain a decent living standard. Rural women working in the agriculture sector are particularly in a disadvantageous position in terms of time poverty.

The finding that low paid occupations are associated with high incidence of time poverty is further reinforced by the monthly income data. Table 11 shows that, generally, the lower the monthly income the higher the incidence of time poverty. For the employed sample, the incidence of time poverty among those who earn a monthly income of Rs 10,000 or more was 16 percent as compared to 30 percent among those who earn Rs 2000 or less per month, indicating a difference of 14 percentage points between the highest and the lowest income group. This gap was wider among women as compared to men, though much smaller between urban women as compared to rural women. In most of the income groups, women were found to be more time poor than their male counterparts in rural as well as urban areas. This indicates a harder trade-off for women between higher income due to joining labour market and increased time poverty as compared to their male counterparts. The trade-off between supplying additional work hours and time poverty is also harder for working women as compared to working men, but less hard as compared to those women who have to make a decision about joining the labour market.

The gender dimension of time poverty can be understood more clearly from the employment status data than from any other labour market indicators. Figure 4 shows a vast difference between males and females in the incidence of poverty in all three categories of employment status: “employees”, “self-employed” and “unpaid family helpers”. The time poverty among the female ‘unpaid family helpers’ is around five-fold the time poverty among their male counterparts. In the case of employees, the gender difference in time poverty is around 10 percentage points, favouring the male. This difference is even greater for the self-employed category. Finally, education was found to reduce the incidence of time poverty, particularly among college and university graduates. In addition, the lowest gender gap in time poverty was found among these graduates (Appendix Table 2).

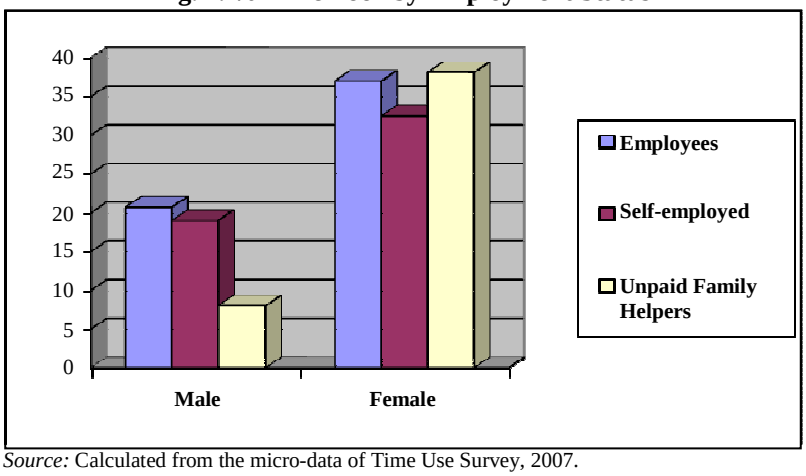
Table 11

% Time Poor by Income Per Month (Rs)

Income Per Month	Total			Rural			Urban		
	Both Sexes	Male	Female	Both Sexes	Male	Female	Both Sexes	Male	Female
Upto 2000	29.8	16.5	39.7	29.2	15.3	44.3	24.2	19.7	28.7
2001–3000	23.6	21.7	36.9	21.5	19.2	43.6	28.6	28.5	29.1
3001–4000	22.8	22.1	33.9	21.2	20.4	35.7	26.3	25.9	31.3
4001–5000	23.2	22.6	37.0	20.9	20.2	46.4	27.4	27.1	31.1
5001–6000	21.5	21.7	17.2	19.3	19.1	23.1	24.5	25.3	13.2
6001–7000	29.4	20.2	24.1	19.8	19.8	20.7	21.4	20.9	28.0
7001–8000	17.7	16.9	32.5	13.4	12.3	35.0	22.4	22.0	30.0
8001–9000	16.6	16.2	23.3	13.6	12.5	31.3	20.0	20.3	14.3
9001–10000	17.8	17.9	16.7	13.6	13.6	12.5	21.9	22.3	16.2
10001 or more	15.8	15.3	24.0	12.9	11.0	30.4	17.3	17.0	21.9
Don't Know	22.1	19.8	45.5	14.8	12.7	33.3	38.5	35.1	199
Refused	22.7	24.2	11.1	17.3	17.0	20.0	34.8	42.1	0

Source: Calculated from the micro-data of Time Use Survey, 2007.
Note: 18 percent of the employed sample has no monthly income.

Fig. 4. % Time Poor by Employment Status



Source: Calculated from the micro-data of Time Use Survey, 2007.

4.3. Determinants of Time Poverty

The analysis carried out in the previous subsection primarily focused on the incidence of time poverty by gender, the place of residence and labour market indicators. Studies focussing on the determinants of time poverty include several other individual, household and community level variables that can be associated with time poverty.[11] Due to data limitation, it is not possible to examine the relationship between time poverty and all these variables. Focusing on some socio-demographic and labour market characteristics of the sampled persons who filled the diary, this section has carried out multivariate analyses to examine the relationship between time poverty and some of these characteristics. The dependent variable is time poverty which takes the value 1 if the sampled person is time poor; otherwise it takes the value 0. Since the dependent variable

[11]See for example, Bardasi and Wodon (2006), Lawson (2007), McGinnity and Russell (2007), and Merz and Rathjen (2009).

is binary, logistic regression rather than OLS is used for the multivariate analysis. Six models have been estimated. Model 1 is based on the entire sample (working and not-working persons) while models 2 and 3 are estimated separately for the male and female samples. Model 4 has included only the employed sample to analyse the relationship between time poverty and labour market indicators including occupation, industry, employment status and income. Models 5 and 6 divide the employed sample between urban and rural areas respectively to take care of the varying work patterns between the two types of areas.

Four independent demographic variables, age, sex, marital status and presence of children younger than 7 years in the household are included in the regression analyses while the level of educational attainment is used to study the relationship between time poverty and human capital. The place of residence represents the influence of community variables on time poverty. Four labour market indicators, occupation, industry, income and employment status, are included in models 4, 5 and 6 to understand their correlation with time poverty. Three seasonal dummy variables have also been included in models 4 and 6, as working hours in rural areas are considerably affected by changing seasons. The operational definition of all these variables and results of the six models are presented in Table 12.[12]

Model 1 includes the entire TUS sample. The results of this model corroborate the bivariate analysis carried out in the previous section. All variables included in this model have an independent and significant effect on the probability of being time poor. The employed persons are more likely to be time poor than those not employed/not-working. It is mainly because the not-working sample spends less time on the committed activities, particularly those falling under the SNA activities category. Moreover, the economically active women use their time in household maintenance and child care in addition to SNA activities. Estimation results of model 1 also show that overall, women are more likely to be time poor than men. As discussed earlier, the underlying cause behind this finding is their time use pattern. The quadratic relationship between age and time poverty also turns out to be significant. The significant and positive relationship between time poverty and being married shows that marriage increases the use of time on committed activities. Same is true for the presence of less than six years old children in the household. Model 1 shows a positive and significant relationship between time poverty and having no education or having education but below the matriculate level. It means that 10 or more years of education enable individuals to have more free time for activities like personal care and rest.

The results of models 2 and 3, in which the analysis is carried out separately for the male and female samples, show no major qualitative change in the findings except that living in urban areas has a positive relationship with male time poverty. In the case of the female model, this relationship turns out to be negative. It shows that males living in urban areas and females living in rural areas are more time poor than their counterparts. It is largely because of the involvement of rural women in farm activities.[13]

[12]The decision to join the labour market (and the number of hours to be supplied) itself depends on a number of other variables including wage rate. To the extent that this may introduce endogeneity in the present context, the coefficients of the regression models that include employment status as an explanatory variable should be interpreted with care.

[13] See Tables 5 and 10.

Table 12

Logistic Regression: The Determinants of Time Poverty

Dependent Variable Time Poor = 1

	Model 1 (Full Sample)	Model 2 (Males)	Model 3 (Females)	Model 4 (Employed)	Model 5 (Employed Urban)	Model 6 (Employed Rural)
Constant	–4.429*	–6.525*	–6.299*	–2.618*	–1.853*	–2.497*
Age (years)	0.084*	0.056*	0.130*	0.050*	0.010	0.070*
Age^2	–0.001*	0.000*	-0.002*	0.000*	0.000	–0.001*
Gender (male=1)	–1.088*	–	–	–1.064*	–0.439*	–1.375*
Place of Residence (urban=1)	0.094*	0.462*	–0.324*	0.119*	–	–
Employment Status (employed=1)	1.772*	3.557*	1.753*	–	–	–
Marital Status (married=1)	0.706*	0.104	1.187*	0.426*	0.433*	0.386*
Children < 7 Years in the Household (Yes=1)	0.286*	0.090*	0.458*	0.166*	0.114*	0.183*
Education (below matric=1)	0.392*	0.421*	0.236*	0.375*	0.372*	0.429*
Occupation (service workers, machine operators/unskilled=1)	–	–	–	0.007	0.166*	–0.049
Employment Status (unpaid family helpers=1)	–	–	–	0.097	–0.103	–0.148*
Industry (transport, trade and manufacturing=1)	–	–	–	0.763*	0.567*	0.857*
Monthly Income (below the minimum wage of Rs 7000=1)	–	–	–	0.208*	–	–
Season (Quarter 1=1)	–	–	–	0.418*	–	0.303*
(Quarter 2=1)	–	–	–	0.561*	–	0.544*
(Quarter3=1)	–	–	–	0.141*	–	0.044
N	37815	18308	19507	15959	5696	10263
– 2 log Likelihood	25513	12371	12144	15550	5938	9572

Source: Estimated from the micro-data of Time Use Survey, 2007.

*Significant at 5 percent or less level of significance.

In order to learn about the relationship between time poverty and labour market indicators, model 4 has been modified to include only the employed sample. In this model, age, sex, marital status, education and place of residence have signs similar to those in model 1. The positive and significant relationship between time poverty and working as unskilled labourers, service workers and plant/machine operators in the urban areas (model 5) shows the hard work of these manual workers. It has been shown earlier that these workers, who are mainly males, spend little time in ex-SNA activities and work long hours in the labour market which makes them time poor. The number of such workers is perhaps too small in rural areas to provide sufficient variation for meaningful estimation of their effect. Although working women use relatively less of their time in the labour market, they take all kinds of responsibilities at home. This dual burden on the sampled women contributes to their time poverty. They are left with relatively little free

time for personal care and rest. Unpaid family helpers are generally rural females who, by definition, receive no income for their work, so that a dummy for this category is likely to be highly collinear with the income dummy. Dropping the income dummy from the regression for rural areas (model 6) makes the dummy for unpaid family helpers highly significant.

The industry, in which a worker is employed, is a strong correlate of his/her time poverty. Workers engaged in trade, transport and manufacturing sectors are more time poor than those engaged in other sectors including agriculture, service and construction. The monthly income also gives a similar message: the workers in low income groups are more time poor than the workers in high income groups.

5. CONCLUSIONS AND POLICY IMPLICATIONS

Availability of time use data is relatively a recent phenomenon in Pakistan. This has allowed us to measure time poverty and look at its incidence across gender, occupational groups, industries, regions, and income levels. The study also uses multivariate regression analysis to examine the relationship between its various determinants. The results of this study provide some important insights into the phenomenon of time poverty in Pakistan and lead to some interesting conclusions.

The first important finding of this study is that women spend more time in committed activities than men whether they are employed or not. As a result, women are more time poor than men in both the circumstances. A closer look at time use statistics indicates the reason behind this occurrence. It appears that there are certain ex-SNA activities, such as household maintenance, and care for children, the sick and the elderly, that are women specific probably due to socio-cultural reasons. Women have to perform these activities irrespective of their employment status, while Pakistani men are not usually involved in them. This substantially increases the time spent by women in committed activities. Since men spend little time in ex-SNA activities, they have more time available for non-SNA activities including leisure and personal care as compared to women.

The finding that women generally spend more time in committed activities and are more time poor as compared to men has two noteworthy implications that are likely to influence school enrolment decision of the females. According to the human capital theory, the decision to enrol in school depends, among other things, on the opportunity cost of education. The monetary value of the hours worked at home is one of the components of this opportunity cost. Since women work more hours at home as compared to men, their opportunity cost of getting enrolled in a school is likely to be higher, making them less likely to enrol in school. However, a cancelling factor is simultaneously at play. Women are also more time poor as compared to men because they work more hours at home. Hence, assuming that time poverty results in reduced labour productivity and workers are paid in the labour market according to their marginal productivity, women would earn less as compared to men for working the same hours. Consequently, another component of opportunity cost of education, which consists of the monetary value of the forgone work in the labour market, would be smaller for women. This would make them more likely to enroll in school. Thus, the net effect of women's time spent in committed activities on female school enrolment could either be positive or negative. However, this issue can only be sorted out by further empirical research that entails generating a single dataset that combines information that is available separately in time use and labour force surveys.

The results of this study also indicate that working women are far more time poor as compared to not-working women, because time spent by them in ex-SNA activities does not reduce considerably enough to compensate for the extra time they devote to their job. Moreover, women face a harder trade-off between higher labour market earnings and increased time poverty as compared to men. In other words, while entering the job market, not only they have to face higher time-poverty in exchange for reduced monetary poverty, but also the terms of exchange are more unfavourable for them than for their male counterparts. This raises the seemingly intriguing issue of whether expanding the job market for women through economic and noneconomic measures would make them better off? In the neoclassical framework, the choice of accepting or rejecting the job offer and number of hours worked will depend on the decision maker's marginal valuation of leisure as depicted by her preferences and valuation of time in the labour market as indicated by the prevailing wage rate. Assuming that women have the same preferences as men, it can be argued on the basis of the findings mentioned above that women have to make more difficult choices in their labour supply decisions as compared to men because women have to spend considerable time on certain ex-SNA activities even after joining the labour market.

Among the various categories of employment status, the case of female unpaid family helpers is unique in several respects. Time poverty among them is around five-folds the time poverty among their male counterparts. They are more time poor even as compared to fellow women in other employment status categories. The likely cause of the high incidence of time poverty among the females in the agriculture sector is the significant presence of unpaid family helpers.. The apparent reason for the huge gender gap in time poverty among unpaid family helpers is that female unpaid family helpers spent a lot more time on ex-SNA activities than their male counterparts.

People in certain professions such as unskilled, skilled and services sector are found to be more time poor as compared to people in other professions. The same is true for some industries like trade, manufacturing and transport. These professions and industries generally require extended hours from the workers, while offering low wage rates. This catches the workers in a situation in which they are both monetary and time poor at the same time. The close association of time poverty with low income found in this study corroborates our conclusion.

In the light of these findings, several policy areas emerge where we need to focus. The first thing that needs to be done is to generate awareness about a fair distribution of responsibilities between men and women. If this can be done, a significant portion of the gender gap in time poverty is likely to be eliminated.

The situation of female unpaid family helpers needs immediate attention not only due to both the magnitude and the gender gap in time poverty that they are facing, but also because they are more likely to be monetarily poor. Generally, these are the women who work along with other family workers in areas such as agriculture and household help and maintenance. As the name suggests, they do not receive any payment for their work. To fully understand their condition, a more thorough study focusing on this particular group is needed.

Though participation in the labour market, particularly among women, is not the only reason for time poverty, the findings of the study show that working people are generally more time poor as compared to the not working population and time poverty is concentrated in certain occupations and industries. This opens up an opportunity for the

government to play its part in reducing time poverty. The line of action is to enforce minimum wage laws to reduce monetary poverty of those who are more likely to be time poor as well and to put mandatory ceiling on work hours in the industries which have high concentration of time poverty. Eradication of monetary poverty in general can also go a long way in this respect by eliminating the need to work long hours at the lowest wage rate just to survive. Improving education also has significant potential in this regard, as high education is found to be associated with low time poverty.

Appendix Table 1

Socio-demographic Characteristics of Women

Age	Working	Not-working
10–14	7.4	17.7
15–19	11.1	13.2
20–24	13.7	12.5
25–29	14.8	12.0
30–34	13.9	10.3
35–39	11.2	8.0
40–44	8.4	6.0
45–49	7.3	5.0
50–54	4.7	3.7
55–59	2.6	3.2
60+	4.9	8.4
All	100	100
Highest Class Passed		
No Formal Education	71.8	54.8
< Primary	5.0	9.3
Primary	5.7	14.2
Middle	2.8	7.9
Matriculation	5.2	7.3
Intermediate	3.5	3.9
Degree and Above	6.1	2.6
All	1001	00

Source: Calculated from the micro-data of Time Use Survey, 2007.

Appendix Table 2

% Poor among the Employed Sample by Education and Gender

Education	Both Sexes	Male	Female
No Formal Education	26.9	18.7	41.1
Below Primary	20.6	19.8	25.6
Primary	21.6	20.7	30.8
Middle	21.8	21.2	32.2
Matriculation	20.7	19.7	30.2
Intermediate	16.1	15.0	23.9
Degree and above	13.6	13.0	16.4
All	22.5	18.9	36.8

Source: Calculated from the micro-data of Time Use Survey, 2007.

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Determinants of Intra-Industry Trade between Pakistan and Selected SAARC Countries

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This paper analyses country-specific and industry-specific determinants of intra-industry trade (IIT) between Pakistan and other SAARC countries using panel data techniques. This paper also disentangles total IIT into horizontal and vertical IIT. The Vertical IIT is further divided into high-quality and low quality IIT. This paper finds that country-specific variables are more important in explaining the IIT relative to industry-specific variables. The decomposition of IIT shows that in the SAARC region Pakistan's IIT is mostly comprised of the vertical IIT. The share of horizontal IIT is comparatively less. The paper offers specific policy recommendations for the promotion of IIT in the SAARC region.

JEL classification: F12, F14, F15
Keywords: IIT, Horizontal IIT, Vertical IIT

1. INTRODUCTION

The Ricardian theory of international trade envisages that the differential in technologies across countries determines the trans national trade pattern. On the other hand, the theory of factor proportions of Heckscher-Ohlin predicts that trade patterns are determined by the relative factor abundance. These theories thus conclude that trade takes place between those countries that have either different factor endowments or technologies. But over the past few decades, contrary to the predictions of these theories, the world has increasingly witnessed that countries having similar technologies and factor endowments do trade more among themselves than those that are dissimilar [Verdoon (1960) and Balassa (1966)].

Concomitantly, it has been noticed that when economies-of-scale are internal to firms in an industry, both the variety of goods and the scale of production are generally constrained by the size of the domestic market. Trade allows countries to relax such constrictions. With trade each country specialises in a narrower range of products than under autarky and enables countries to produce different varieties of goods (i.e., differentiated products). Thus, with trade a country can buy goods (varieties) from other countries that it does not produce itself; as a result its consumers benefit from a bigger

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variety and of course lower prices as well. The production of differentiated products and demand by domestic consumers for foreign varieties give rise to what is known as intra-industry trade (IIT). Economies-of-scale thus becomes an independent reason for international trade to take place even when countries have similar production technologies and primary resources [Krugman (1979) and Lancaster (1980)].

IIT is, thus, referred to a two-way exchange of goods within the same industry group. Evidently, the IIT share in the total trade among developed countries is quite significant[1] and has been secularly rising by about 5 percent annually. There is a virtual absence of IIT in trade relations among developed and developing countries, that rather observe the inter-industry trade pattern. Some studies find the presence of IIT in trade between developing countries [Willmore (1972)].

Since the 1980s, many studies examined the determinants of IIT with industry and country characteristics. Krugman (1981) argues that economies of scale and consumers' tastes for a diversity of products are the main determinants of IIT. Others argue that country-specific variables such as country size, per capita income, distance and trade orientation are the important determinants of IIT [Stone and Lee (1995) and Hummels and Levinsohn (1993)]. Greenaway, *et al.* (1995) argue that industry-specific variables, like scale economies, firm concentration ratio and product differentiation, are the determinants of IIT. Clark and Stanley (1999) and Greenaway, *et al.* (1999) argue for both country-specific and industry-specific variables as the determinants of IIT.

The above eclectic approach reached its climax with the above analysis was extended to the multi-country/multi-industry analysis using panel estimation techniques [Menon, *et al.* (1999)]. The need for such studies arose as the revolution in information, communication and transportation technologies facilitated fragmentation of global production that provides a sound basis for growing IIT at the regional level.

Being fairly similar to each other, SAARC (South Asian Association for Regional Cooperation) countries satisfy the basic requirements for the conduct of intra-regional IIT. The share of Pakistan's exports going to SAARC countries has been hovering around 5 percent, which is quite low as compared to its real potential. The main reason for this meagre performance, besides others, is lack of focus in regional policies on IIT. The regional trade share can be enhanced manifold by focusing more on IIT, as it prompts technological progress and takes advantage of economies of scale.

Despite the large potential of IIT for trade expansion in the SAARC region, only a couple of attempts have been made in Pakistan to estimate IIT levels for Pakistan's total trade [Kemal (2004) and Shahbaz and Leitao (2010)]. Shahbaz and Leitao (2010) also study the determinants of IIT between Pakistan and its ten major trading partners in the world using country-specific variables.

It is also important to disentangle total IIT into horizontal IIT and vertical IIT.[2] This is because for each type of IIT the explanatory variables are usually different. Horizontal IIT benefits countries more with similar factor endowments by enabling them

[1]For instance, in 2000, IIT was comprised of 86.20 percent, 85.01 percent and 80.42 percent of total manufacturing trade of Germany-France, Netherlands-Belgium and Luxemburg, France-Belgium and Luxemburg [Fontagne, *et al*. (2006)].

[2] Horizontal IIT is defined as IIT of goods having same qualities (e.g., automobiles of similar class and price range), whereas vertical IIT is defined as IIT of goods having different qualities (e.g., automobiles of different brands).

to utilise economies of scale in production. Specialisation in vertically differentiated products may reflect the countries' comparative advantage in those products, their differences in factor endowments, and high expenditure on research and development, etc. [OECD (2002)]. None of the available Pakistani study attempted to disentangle total IIT into horizontal IIT and vertical IIT. Within this perspective, this paper attempts to analyse the trends in IIT and using the panel estimation approach works out country-specific and industry-specific effects of IIT. Finally, the paper attempts to disentangle total IIT into horizontal and vertical IITs.

The rest of the paper is divided into three sections. Section 2 describes the methodology used in the paper. Estimation problems and empirical results are discussed in Section 3. Finally, Section 4 concludes and offers policy recommendations for the promotion of IIT in the SAARC region.

2. METHODOLOGY

This paper estimates the determinants of IIT by using the gravity model approach. The gravity model has been extensively used to analyse the impact of regional trade agreements, currency unions, migration flows, intra-industry trade etc. The following equation is referred as the core gravity model. It states that bilateral trade between country *i* and *j* is an increasing function of the size of the country *h* and *f* measured in terms of their GDP and decreasing function of the distance between the two countries. Thus, countries similar in their relative economic size or population will trade more with each other. Tinbergen (1962) proposed the following gravity model to analyse the effects of bilateral trade:

$$Y_{hf} = \alpha \frac{y_h y_f}{D_{hf}}$$

α is a constant of proportionality, Y_{hf} is total bilateral trade between home country *h* and trading partner *f*, *y* is economic size of the countries measured in terms of GDP, and D_{hf} represents trade barriers between the countries. These barriers can be distance, common language, common currency, colonial links, etc. The volume of trade will be lesser among countries located farther from each other. In its logarithmic form, the gravity equation can be defined as:

$$Y_{ij} = \alpha + \beta_1 logy_i + \beta_2 logy_j - \beta_3 logD_{ij} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Since its introduction in the international trade literature by Tinbergen (1962) and its subsequent empirical success, at present, the gravity model is a widely used tool to estimate bilateral trade flows between countries. The core gravity model (Equation 1) is augmented by the inclusion of several additional variables like cultural differences, linguistic differences, exchange rate, border effects etc., that possibly affect a country's bilateral trade flows. Following the tradition of Clark and Stanley (1999), Greenaway, *et al.* (1999) and Turkcan (2005), we also augment the core gravity model with two types of variables, namely, country-specific variables and industry-specific variables for analysing the flows of intra-industry trade of Pakistan with SAARC countries. The augmented gravity model is expressed as:

$$Y_{jhft} = C + log\ DIST_{hf} + log\ AGDP_{hft} + log\ DPCGDP_{hft} + log\ DHCAP_{hft} + log\ AEST_{jhft} + log\ DVAEST_{jhft} + log\ DPCAP_{jhft} \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

Y_{jhft}: Intra-industry trade flow between home country (Pakistan) *h* and trading partner *f* in industry *j* in year *t*.

A brief account of the variables described above and their economic relevance in the analysis are discussed below:

$DIST_{hf}$ (distance between Pakistan and its trading partner's port of entry in nautical miles): on a priori basis, it can be argued that trade is negatively correlated with the distance. That is, the farther the trading partners from each other, the higher the transportation cost.

$AGDP_{hft}$ (average GDP of Pakistan and its trading partner to represent market size): the gravity model measures the market size both in terms of GDP and population. In this paper we use real GDP in 2000 US dollar prices. Small economies without trade have limited ability to avail themselves of the economies of scale. Trade increases the size of the market for domestic firms and thus allows them to reap the benefits of economies of scale due to increased productivity and reduced average costs; while consumers enjoy increased variety of available goods at lower prices. With free trade, firms producing intermediate goods also make use of increasing returns to scale and thereby increase the scale of production and varieties of intermediate goods [Ethier (1982)]. Thus, a positive sign is expected on the share of IIT and the average market size.

$DPCGDP_{hft}$ (absolute difference in GDP per capita between Pakistan and its trading partner): it is used as a proxy for taste and preferences. Linder (1961) argues that per capita GDP is a measure of people's taste and preferences and countries with similar levels of per capita GDP have similar tastes and preferences, thus they will engage in more bilateral trade. Countries will trade less as bilateral differences of per capita GDP escalate. Helpman and Krugman (1985) consider differences in per capita GDP as differences in capital-to-labour ratio (that means countries have dissimilar factor endowments). If there are bilateral differences in factor endowments, then there will be lesser IIT. Thus, a negative sign is expected between the share of IIT in total international trade and differences in per capita income.

$DHCAP_{hft}$ (absolute difference of the percentage of population with higher education between Pakistan and its trading partner): we use the ratio of skilled labour to unskilled labour as a proxy for human capital endowment. Krugman and Helpman (1985) demonstrate that differences in factor endowments between any two countries lead to a decrease in the level of bilateral IIT. Ethier (1982) argues that skilled labour, mainly R&D personnel, is the essential ingredient for the production of intermediate goods variety. Therefore, if countries differ in their factor endowments, then the scope of IIT reduces. Contrary to this, Feenstra and Hanson (1997) show that a relative increase in the supply of skilled labour in the home country as compared with the foreign country will increase the supply of vertically differentiated goods from home to foreign country, which leads to an increase in IIT of intermediate goods. Thus, the expected sign of bilateral inequality in factor endowments on IIT will be ambiguous.

The industry specific variables are defined as follows:

$AEST_{jhft}$ (Average number of establishments at industry level between Pakistan and its trading partner): it is used as a proxy for product differentiation. The larger the number of establishments, the greater will be the variety of goods produced, since every firm produces only one differentiated product in equilibrium [Krugman (1981)].

$DVAEST_{jhft}$ (Absolute differences of value added per establishment at industry level between Pakistan and its trading partner): it is used as a proxy for economies of scale. Economies of scale internal to a firm are considered as negatively related to product differentiation. Ethier (1982) argues that the economies of scale are a result of greater division of labour rather than due to large plant size. And IIT in manufactured goods arises because firms find it profitable to split the production process at different plants due to the economies of scale achieved through division of labour. So, small plant size is positively related to IIT. He expects a negative sign between economies of scale accrued to a firm due to its large plant size and IIT. On the other hand, Feenstra and Hanson (1997) argue that vertical specialisation allows firms to produce goods at different plants, so the plant size should be small because the different stages of manufacturing are conducted differently at different plants. It means that vertical specialisation leads to increase in IIT.

$DPCAP_{jhft}$ (Absolute difference of physical capital endowment per worker at industry level): this variable is included to take into account the effect of the differences in factor endowments. Ethier (1982) argues that IIT is expected to be negatively correlated with the differences in the capital to labour ratio. He assumes the differentiated intermediate good to be capital intensive, when the supply of capital in the home country rises relative to labour, the number of intermediate goods produced in the home country will rise and the producers of final goods in the home country will begin to rely on locally manufactured intermediate goods. Thus, the share of IIT in intermediate goods will eventually decline. Feenstra and Hanson (1997) show that for vertical specialisation, dissimilarities in the capital to labour ratio between the trading partners is a necessary condition. Therefore, there is no consensus over the expected sign of bilateral inequality in the capital to labour ratio on the share of IIT.

2.1. Empirical Model

In the preceding subsections variables were defined and their relationships with IIT were discussed, on *a priori* basis. This subsection defines the methodology to find the empirical evidence on the relationship between IIT and the included variables. For this purpose we investigate the following model:

$$IIT_{jhft} = C + log\ DIST_{hf} + log\ AGDP_{hft} + log\ DPCGDP_{hft} + log\ DHCAP_{hft} + log\ AEST_{jhft} + log\ DVAEST_{jhft} + log\ DPCAP_{jhft} \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

Equation (3) is similar to Equation (2) except that Y_{jhft} is now replaced with IIT_{jhft} in Equation (3). For this we utilise the measure developed by Grubel and Lloyd (1975):

$$IIT_{jhft} = \frac{\sum_{i=1}^{N}\left[(X\right]_{jhft} + M_{jhft}) - \sum_{i=1}^{N}\left|X_{jhft} - M_{jhft}\right.}{\sum_{i=1}^{N}\left(X_{jhft} + M_{jhft}\right)} \quad \ldots \quad \ldots \quad \ldots \quad (4)$$

Where, $j = 1…J$ represents industry groups, $i = 1…I$ are products in an industry j, $f = 1…F$ are trading partners of Pakistan and h is home country (Pakistan). IIT_{jhft} means intra-industry trade in the *ith* good of the *jth* industry between Pakistan and its trading partner f in year t. Equation (4) takes its values between 0 and 1. A value of 0 indicates pure inter-industry trade (no intra-industry trade) and 1 represents pure intra-industry trade.

2.2. Data and Data Limitations

The data on the number of establishments, value added at establishment level, gross fixed capital formation for Bangladesh, India and Sri Lanka are taken from United Nations Industrial Statistics published by United Nations Statistics Division. For Pakistan, the data on these variables are taken from the Census of Manufacturing Industries. The data on GDP, per capita GDP and education are taken from World Development Indicators (WDI) published by the World Bank. The data on distance between ports of the home country and the trading partner are taken from the web.[3] Data on exports and imports of Pakistan are taken from Foreign Trade Statistics of Pakistan, and State Bank of Pakistan External Trade Statistics.

The available data on industry-specific variables are in Local Currency Unit of the respective countries. To make them comparable, values of all the variables are converted into the US dollar. All variables are nominal; this study makes them real by using the GDP deflator.

The latest data on the number of establishments, value added at establishment level and gross fixed capital formation are available only for the period up to 2000 for Bangladesh, India, and Sri Lanka. This study uses the data for the years: 1990-91, 1995-96 and 2000-01. The data on most of the variables used here are not available for other SAARC countries: Afghanistan, Bhutan, Maldives and Nepal, that is why these countries are not included in the analysis. Based on the trade data obtained from the foreign trade statistics of Pakistan, we compute values of IIT index at the three-digit level of ISIC (International Standard Industrial Classification) Revision 3.

2.3. Decomposition of Intra-industry Trade

To disentangle the total *IIT* into horizontal and vertical *IIT*, we apply the method proposed by Greenaway, *et al*. (1995). This method is based on the ratio of the unit value of exports to the unit value of imports. This method can be described by the following formula:

$$1-\alpha \le \frac{UV_i^{hf,x}}{UV_i^{hf,m}} \le 1+\alpha \qquad \text{or} \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (5)$$

$$\frac{UV_i^{hf,x}}{UV_i^{hf,m}} \le 1-\alpha \quad \text{or} \quad \frac{UV_i^{hf,x}}{UV_i^{hf,m}} \ge 1+\alpha \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (6)$$

$UV^{hf,\,x}{}_i$ is unit value of export in the *ith* industry between home country h, and foreign country f,

[3] www.e-ships.net/dist.htm

$UV^{hf,m}{}_i$ is unit value of imports in the same *ith* industry between home *h*, and foreign country *f*, α is the arbitrarily fixed dispersion factor; it normally takes a fixed value of 0.15. This is because the transportation and freight costs are normally taken as 15 percent of the value of the product.

If the ratio of the unit value of exports to imports lies within the range defined by Equation (5), then the good is classified under the horizontal IIT and if this ratio lies within the range defined by Equation (6) then the good is facing vertical IIT. The above formula is based on the assumption that prices of the goods reflect their quality. High priced goods have high quality whereas low price goods have low quality.

3. ESTIMATION AND RESULTS[4]

The data set used in the estimation is a panel data set having two dimensions: country and time, three country pairs and three years: 1990-91, 1990-95, and 2000-01. The number of industries differs over the years and across countries. The data for the number of establishments, gross fixed capital formation, and value added are reported in SITC-3 for 1990-91 and 1995-96, while data for 2000-01 of the same set of variables are in ISIC Revision-3 (International Standard Industrial Classification). To make the data comparable we convert SITC-3 codes into ISIC-3 codes using the conversion method obtained from the United Nations Industrial Classification Registry (2012). Before going for estimation, different diagnostic tests are performed on the data to check for any econometric problem present in the data. The four series exhibit the presence of the unit root that is discussed in the following sub-section. The fixed effects and random effects estimators are based on the assumption that the error term is idiosyncratic (i.e., it is distributed with zero mean and constant variance). Since in the panel data we have both time-varying and time-invariant regressors, there always exists a possibility of the correlation between the error terms and the presence of the heteroscedasticity. This leads to underestimation of the error term and over prediction of the regressors of the model. For short panels, it is possible to get error-corrected estimates of the model by using the robust command. Therefore, the robust command is used to adjust for the correlation and heteroscedasticity in the STATA programme.

3.1. Evidence of IIT

The results of Grubel-Lloyd (GL) indices for total manufactured goods trade are presented in Table 1. Estimates indicate that the share of IIT in Pakistan's total trade with Bangladesh, India and Sri Lanka is low by international standards. These estimates are consistent with the findings of Kemal (2004).

Table 1

Grubel-Lloyd Indices

(Percent)

Country	1990	1995	2000
Bangladesh	3.1	7.7	19.0
India	13.0	7.4	8.3
Sri Lanka	4.8	5.4	8.4
SAARC	6.9	6.8	11.9

[4] STATA software programme is used for estimation.

The trend in IIT of Pakistan is quite the same with each SAARC country. These shares of IIT in total trade, albeit low, show a rising trend over time. Pakistan's IIT with Bangladesh was 3.1 percent in 1990 but it increased to 19 percent in 2000. With Sri Lanka, the IIT was 4.8 percent in 1990 that rose to 8.4 percent in 2000. This shows a significant change in the pattern of Pakistan's trade with these countries. With India the share of IIT was 13 percent in 1990 but declined to 7.4 percent in 1995. However, it rose to 8.3 percent in 2000. Pakistan's share of IIT with India is expected to rise further after the granting of MFN status to India. In sum, despite some ups and downs at country levels, the volume of Pakistan-SAARC IIT has increased from 6.9 percent in 1990 to 11.9 percent in 2000.

3.2. Determinants of IIT

Industry-specific and country-specific determinants of IIT levels are tested here using the fixed effects (FE) model. Table 2 reports that country-specific variables are statistically significant at 1 percent significance level, whereas, industry-specific variables are not very significant in explaining the determinants of IIT.

The results reveal that the market size (measured by AGDP) exerts a positive and significant impact on IIT. Increase in the market size due to trade makes it feasible for firms to increase their production and benefit from the economies of scale. The presence of economies of scale in the production process reduces the average cost of production, thus making firms competitive in the international market. Consequently, with trade-led increase in profit making opportunities for firms the IIT increases.

Table 2

Fixed Effects (FE) Model Results for Intra-industry Trade

Variable	Coefficient	t-stat
DIST	–0.67	–4.83
AGDP	2.39	5.05
DPCGDP	–4.38	–5.19
DHCAP	1.88	3.86
AVGE	–0.09	0.91
DPCC	0.13	1.06
DVAD	–.015	–0.97
R-Square	12.38	

As expected, the distance with trading partners is found to be negatively affecting IIT of Pakistan with selected SAARC countries. It means that with a fall in distance, the cost of transportation and communication decreases that causes an increase in IIT.

Differences in per capita GDP (a proxy for consumer's tastes and preferences) have negative and statistically significant effect on the level of IIT. This result suggests that consumers' tastes and preferences become dissimilar (in trading partner countries) with increase in the differences in per capita income; they start demanding different goods. If products demanded by consumers are not available in the region, it leads to a fall in IIT.

The bilateral inequality in human capital endowment (DHCAP) has statistically significant and positive effect on the IIT. This result shows that a relative increase in the supply of skilled labour at home relative to a foreign country will increase the vertically differentiated goods from home to foreign country. This finding is in line with the findings of Turkcan (2005), Flam and Helpman (1987).

Regarding the industry-specific variables, the average number of establishments does not turn out to be statistically significant in explaining the IIT. The sign of the coefficient is opposite to the predictions of the theory. Turkcan (2005) finds similar results for Turkey.

The variable differences in value added at the industry level, a proxy for economies of scale is negative but is statistically insignificant. This implies that plant size should be reduced to increase the level of IIT. This finding is against the theoretical prediction of Krugman (1979) but in line with the empirical finding of Greenaway, *et al*. (1995), that favours production fragmentation to increase the number of differentiated variety, thereby leading to an increase in the level of IIT.

The bilateral differences in the capital-labour ratio between trading partners measure the differences in factor endowments. This variable has a positive correlation with IIT, but turns out to be insignificant. The positive association between DPCC and the IIT is consistent with Feenstra and Hanson (1997), who argue that bilateral inequality in capital-labour ratio is a necessary condition for vertical specialisation.

So far we have discussed the estimates obtained through the FE model. We shall now examine the RE estimates (Table 3). The RE technique does improve the significant level and magnitude of the coefficients of all variables relative to the FE model. But it does not make any of the variables significant that was found to be insignificant under the FE model. The RE model also explains more variation in the model relative to the FE model as indicated by the value of R-square.

Table 3

Random Effects Model (REM) Results for Intra-industry Trade

Variable	Coefficient	z-stat
DIST	–0.58	–6.15
AGDP	1.94	5.08
DPCGDP	–3.52	–4.93
DHCAP	1.56	3.84
AVGE	–0.12	–1.38
DPCC	0.14	1.47
DVAD	–0.15	–1.06
R-Square	12.59	

While choosing between the Fixed Effects (FE) and the Random Effects (RE) models, the Hausman test is performed. Hausman rejects the FE model in favour of the RE model. It is, therefore, concluded that the RE estimates are efficient and consistent relative to those of the FE estimates. This leads us to conclude that the level of IIT between Pakistan and its trading partners in the SAARC region is affected by random events.

3.3. Horizontal and Vertical Intra-industry Trade

The pattern of horizontal IIT and vertical IIT for Pakistan and her selected trading partners in the SAARC region is reported in Table 4. The table reveals that in the SAARC region Pakistan's IIT is mostly comprised of the vertical IIT (i.e., 82.50 percent) and to a lesser extent the horizontal IIT (17.50 percent). The vertical IIT is high among the countries with greater differences in the level of technology and factor endowments.

The vertical IIT is further decomposed into low vertical IIT (LVIIT) and high quality vertical IIT (HVIIT). The share of low quality vertical IIT in total IIT is 69.95 percent and that of high quality vertical intra-industry trade is 12.55 percent (Table 4).

Table 4

Percentage Shares of HIIT, LVIIT, and HVIIT in Total IIT: 2005-06

Intra-industry trade	Bangladesh	India	Sri Lanka	SAARC
HIIT	2.90	9.66	39.94	17.5
LVIIT	93.20	85.96	30.68	69.95
HVIIT	3.90	4.38	29.38	12.55

The cross-country analysis of the IIT indicates that Pakistan's share of low quality vertical IIT (LVIIT) in total IIT is much higher with Bangladesh (93.20 percent) and India (85.96 percent) and is low with Sri Lanka (30.68 percent). This implies that Pakistan's IIT with Bangladesh and India is largely composed of low quality, low priced products.

The share of high quality vertical IIT (HVIIT) is higher with Sri Lanka (29.38 percent) as compared to Bangladesh (3.9 percent) and India (4.38 percent). This trade is taking place mostly in textile products (HS 61034200, HS 61169300, and HS 61091000). The reason for the higher share with Sri Lanka is that Pakistan is specialised in the production of textile products while Sri Lanka is not. Pakistan exports high quality textile products to Sri Lanka. The same is not true for Pakistan's IIT with Bangladesh and India. The reason for the low share of HVIIT with Bangladesh and India is that Pakistan, Bangladesh and India specialise in the production of textile products. Besides, all three of these countries have very restricted trade policies in textiles.

The share of horizontal IIT in total IIT of Pakistan is low as compared with the vertical IIT. It comes to 17.5 percent of the total IIT. The cross-country shares reveal that in the category of horizontal IIT, Sri Lanka is leading with 39.94 percent followed by India with 9.66 percent and Bangladesh with 2.9 percent. The relatively lower share of the horizontal IIT in total IIT indicates that the region is trading very little in products that are similar in quality and price. In sum, the SAARC region's most potential lies in HVIIT, that of course is small right now. The regional countries therefore need to implement such policies that should enhance the share of HVIIT in the total IIT.

4. CONCLUSION AND POLICY RECOMMENDATIONS

The focus of this paper has been on analysing the trends and determinants of the intra-industry trade of Pakistan with her major SAARC trading partners. Specifically, the paper examines country-specific and industry-specific determinants of intra-industry

trade. The data set used has two dimensions: country and time, which allowed us to use the panel data techniques. Panel data techniques can be performed on using both the fixed-effects (FE) and random-effects (RE) models. The result of the Hausman test supported the RE model; that is, the RE estimates are more efficient than those of the FE model.

Based on the results of the RE model, this paper concludes that country-specific variables are more relevant in explaining IIT than industry-specific variables. In particular, market size is found to be positively correlated with IIT. The differences in per capita GDP between trading partners (i.e., tastes and preferences) are negatively correlated with IIT. The sign of the variable distance is also as expected, that is large distance between trading partners reduces bilateral trade. Intra-industry trade is found to be positively related with bilateral differences in human capital confirming the Feenstra and Hanson (1997) hypothesis that a relative increase in the supply of skilled labour in the home country relative to foreign country will increase the supply of vertically differentiated goods from home to foreign country, which leads to an increase in IIT of intermediate goods. The paper also finds an increasing share, albeit low, of IIT in the total trade of Pakistan with the SAARC countries. The paper thus suggests that Pakistan and its trading partners in the region should make concerted efforts to increase the level of IIT to enhance and sustain the overall volume of the regional trade and strengthen regional economic interests. The SAARC countries have vast potential to expand their economic relations within the region. The competitive nature of the SAARC countries is considered as the major impediment in the way of regional trade expansion. This obstacle can be overcome by engaging extensively in the IIT at the regional level.[5]

To increase the level of IIT in the SAARC region; we put forward the following recommendations:

- Since the distance appears to be a major constraint in the way of increasing regional trade, therefore regional governments should pay special attention to improve not only the conditions of their transport and communication infrastructures but also strive to reduce the cost of shipping goods across borders.
- Manufacturing firms need to allocate more funds for research and development to develop new and better varieties in the existing lines of production. This should help in expanding IIT in the SAARC region.
- Textiles and clothing have a large potential to increase the level of IIT in the region. Regional countries are currently restricting trade in textiles and clothing by using a negative import list and other tariff and non-tariff measures. It is, therefore, recommended that in the future trade negotiations at bilateral or regional levels, the governments should make efforts to remove textile products and clothing from the negative lists and reduce other trade barriers affecting their textiles and clothing trade.
- Vertical IIT has turned out as the major component of the (total) IIT in the region. Therefore, in the future the regional governments should focus on expanding and promoting the production of high-end products for which the

[5]Similar proposal was also made in Kemal (2004) and Mahmood (2012).

demand exists in the region. This would require special incentives to develop and design high-end products.

- Finally, since the size and the share of IIT in the SAARC region is growing sharply, therefore, it is advisable for the regional governments to encourage economies-of-scale in production, which is the basis of this kind of international trade. For this to happen, initially some incentives may be offered to selected firms until they attain sufficiently large production scale that makes them competitive regionally as well as internationally.

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On the Welfare Cost of Inflation: The Case of Pakistan

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In this paper, we quantify welfare costs of inflation for Pakistan for the period 1960-2007 using semi-log and double-log money demand functions. We find that the welfare gain of moving from positive inflation to zero inflation is approximately the same under both money demand specifications but the behaviour of the two models is fairly different towards low interest rates. Moving from zero inflation to zero nominal interest rate has a substantial gain under double-log form compared to the semi-log function. The compensating variation approach for the semi-log model gives higher welfare loss figures compared to Bailey's approach. However, the two approaches yield approximately the same welfare cost of inflation for the double-log specification.

Keywords: Monetary Policy, Inflation, Interest Rate, Welfare Costs, Money Demand Functions

1. INTRODUCTION

Inflation generally defined as sustained increase in price levels is viewed as having widespread implications for an economy on different accounts. It creates several economic distortions which stifle government's efforts to achieve macroeconomic objectives. In principle, price stability is considered a necessary condition for lessening income fidgets and disparities. Several studies provide empirical evidence that growth declines sharply during a high inflation crisis [see, for example, Bruno and Easterly (1996)]. Since high inflation creates uncertainty, distorts investment plans and priorities, and reduces the real return on financial assets, it discourages savings, and hence affects growth negatively. Moreover, high inflation adversely affects economic efficiency by distorting market signals. All these costs are associated with unanticipated inflation and have received considerable attention in the literature. Most of these costs involve transfer of resources from one group to another and the losses and gains tend to offset each other. However, it is widely agreed that most of the unexpected inflation-related costs can be avoided if inflation is correctly anticipated. Though

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inflation, even when fully anticipated, results in loss to society in terms of net loss of valuable services of real money balances.

Under an inflationary environment, people anticipate inflation and accordingly adjust the ratio of real balances to income to the opportunity cost of holding money.[1] Since, there is no close substitute for real balances, and since an unavoidable cost of holding money is its opportunity cost, i.e., the nominal interest rate, the nominal rates reflect the expected inflation. So, according to the Fisher hypothesis, the cost of holding real balances increases with an increase in anticipated inflation.

Beginning with Bailey (1956), the welfare cost of inflationary finance is treated as the deadweight loss of inflation tax, which is calculated by integrating the area under the money demand curve (Harberger Triangle). Traditional analyses of welfare costs of inflation have emphasised that these costs depend on the form of money demand function [see, for example, Bailey (1956)]. Models based on a Cagan-type semi-logarithmic demand and double-log money demand functions have extensively been employed in the literature for calculating the welfare cost of inflation. The two different types of demand specifications are very likely to give different estimates of welfare cost. This difference mainly exists due to the behaviour of the two demand curves towards low inflation [see, for details, Lucas (2000)].

Empirical literature on the welfare cost of inflation suggests that money stock should be defined in the narrowest form representing the true liquidity services provided to society. More precisely, the money stock should be taken in its narrow form as monetary base and M1. In some of the cases M1 tends to overstate the welfare cost because when it is treated as a single aggregate (currency only) welfare integral it runs from zero to the positive nominal interest rate. Therefore, to accommodate for the interest bearing demand deposits component of M1, recent studies calculate welfare costs in the currency-deposit framework.[2]

Traditional studies on hyperinflation countries estimated the welfare cost of inflation against Friedman's deflation rate as under hyperinflation the real interest rate was zero and the deflation rule implied zero inflation. However, in applying this method to a relatively developed country with stable prices and positive real interest rates, researchers evaluate the welfare cost of positive inflation against both zero inflation and deflation policies. All these issues—the formulation of a monetary model, definition of monetary aggregates, and optimal inflation and interest rate policies, are equally important areas of inquiry.

Empirical studies on inflation in Pakistan have mainly focused on exploring the significant derivers of inflation [see, for example, Qayyum (2006), Khan and Schimmelpfenning (2006), Kemal (2006) and Khan, *et al.* (2007)]. A general consensus of these studies is that monetary factors have played a dominant role in recent inflation. Moreover, some of the studies have emphasised the role of SBP in implementing an independent monetary policy with the objective of attaining price stability.[3] The present

[1]Inflation resulting from this process imposes a tax on cash balances and a loss in terms of non-optimal holding of money.

[2]Distinct role of currency and deposits is emphasised in Marty (1999), Bali (2000), and Simonsen and Rubens (2001).

[3]See, for example, Hussain (2005), Mubarik (2005), and Khan and Schimmelpfenning (2006) giving some threshold levels of inflation.

authors have not been able to find even a single study assessing the cost borne by society due to positive inflation in Pakistan.

Given this background, this paper attempts to comprehensively investigate the welfare cost of inflation for Pakistan. Thus, this study endeavours to bridge the gap in empirical literature on inflation in Pakistan. We use time-series data over the period 1960 to 2007 for monetary aggregates, namely, the monetary base, M1, currency and demand deposits, gross domestic product (GDP), and nominal interest rates, to estimate both semi-log and double log (aka log-log and log-lin, respectively) money demand functions. Our paper is also very different from the existing literature on money demand function with regard to the estimation technique used in earlier studies.[4] Specifically, we employed the autoregressive distributed lag model (ARDL) developed by Pesaran, *et al.* (2001) in our empirical estimation. The major advantage of ARDL modelling is that it does not require any precise identification of the order of integration of the underlying series. In addition to that, this technique is applicable even if the explanatory variables are endogenous.

After estimating the parameters of the long-run demand functions for narrow money, we assess the welfare losses associated with different rates of inflation quantitatively. By computing and comparing the welfare loss across different money demand specifications and monetary aggregates we address the issue of reducing inflation to zero and further reducing it to Friedman's deflation rule.

The rest of the paper proceeds as follows. Section 2 reviews the literature on the welfare cost of inflation and money demand function in Pakistan. Section 3 explains the theoretical model specifications, describes the estimation technique, discusses the data used in our analysis, and presents the definition of the variables included in our empirical models. Section 4 reports the estimation results and the welfare cost calculations based on the estimated models, while Section 5 contains the conclusions.

2. LITERATURE REVIEW

In this section, we provide a brief review of prior empirical studies on the estimation of welfare cost of inflation. We also review the literature related money demand functions as the welfare cost of inflation crucially depends on the behaviour of money demand function.

(a) The Welfare Cost of Inflation

The issue of welfare cost of inflation is addressed under both partial equilibrium (traditional) and general equilibrium (neo-classical) frameworks. Bailey (1956) is the first to study the welfare implications of public sector inflationary finance. He shows that open (anticipated) inflation costs members of society more than the revenue, which accrues to the government. The dead weight loss associated with this implicit tax is the difference between the cost to the money holders and the transfer to the government. Inflation acts like an excise tax on money holding and the dead weight loss of anticipated (open) inflation is the welfare cost of inflation.

Reviewing the literature, we find that the neoclassical non-monetary models have been extended in three ways to allow for a role of money: (i) Money-in-the-Utility

[4] See Section 2 on Pakistan-specific literature on the empirical estimation of money demand functions.

Function model (MIU), directly yields utility and is treated like a consumer good [Sidrauski (1967)], (ii) in the Cash-in-Advance model (CIA), some transactions require cash and transactions or illiquidity costs create demand for money [Clower (1967); Kiyotaki and Wright (1989)], and (iii) the Overlapping Generation model where money is used for the intertemporal transfer of wealth [Samuelson (1958)].

The welfare cost of inflation in its magnitude depends on the benchmark inflation rate. That is, what should be the desirable or optimal rate of inflation? Optimal inflation rate in some of the studies is taken as zero-inflation or price stability and in others as the Friedman's deflation rate. Bailey (1956) measuring welfare cost of inflation for hyperinflation countries uses zero-inflation rate as the benchmark, which was also equivalent to Friedman's deflation rule because in hyperinflation the real rate of interest is zero.

However, later studies show that the welfare loss function is lowest when Friedman's optimal deflation rule is applied [Friedman (1969); Barro (1972) and Lucas (2000)]. Friedman's deflation rule is based on Pareto optimality condition where the socially efficient level of production of a commodity is the one where marginal cost is equal to marginal benefit (later being the price of the commodity). The marginal cost of producing money is nearly zero for the monetary authority but the social cost is the nominal interest rate, the opportunity cost of holding cash. To minimise the cost of holding money, the nominal interest rate should be brought to zero, which requires deflation equal to the real interest rate.

The traditional partial equilibrium model does not take into account the fact that the receipts from inflation tax can be used for the production of government capital and can contribute to economic growth. This aspect of inflationary finance was developed by Mundell (1965) and was later extended in Marty (1967) in the welfare costs of inflation context. Marty (1967) using Cagan's and Mundell's money demand specifications for Hungary shows that the traditional measure of welfare is close to the measure of welfare cost in the model where inflation induces growth. The welfare cost of 10 percent inflation is 0.1 percent of income and 15.84 percent of government budget.

Welfare cost estimates of Bailey (1956) and Marty (1967) are based on the average cost of revenue collection through money creation but Tower (1971) measures it as a marginal cost. Specifically in Tower (1971), for a hypothetical economy, "Sylvania", the average and marginal costs are compared. The rate of inflation at which the average cost of inflationary finance is 7 percent corresponds to the marginal cost of 15 percent.

Anticipated inflation raises the transaction costs as the individuals raise the frequency of transactions which results in increased velocity of money [Bailey (1956)]. However, another cost of inflation arises when individuals facing high inflation employ alternative payments media with higher transaction costs. Barro (1972) is the first to identify the role of substitute transaction media. Using the partial equilibrium model for Hungary, the welfare costs of high, hyperinflation and unstable hyperinflation are calibrated. He finds that the welfare cost of 2-5 percent monthly inflation rate is between 3-75 percent. He also shows that welfare cost increases sharply for the inflation rate above 5 percent per month.

Fisher (1981) studies the distortionary costs of moderate inflation and applies the partial equilibrium analysis to the US economy. The welfare loss is measured by the

consumer surplus measure that incorporates the production and taxation through portfolio choice decision. Using high-powered money as the monetary asset, the welfare loss of 10 percent inflation is estimated to be about 0.3 percent of GNP. Using Bailey's (1956) consumer surplus formula, Lucas (1981) calculated welfare cost of inflation for the US, defining money as M1. The welfare gain is estimated to be 0.45 percent of GNP as the economy moves from 10 percent inflation to zero inflation.

Cooley and Hansen (1989) estimate the costs of anticipated inflation in a real business model where money demand arises from cash-in-advance (CIA) constraint. In this model, anticipated inflation operates as inflation tax on activities involving cash (consumption) and individuals tend to substitute non-cash activities (leisure) for cash activities. The welfare cost is measured as a reduction in consumption as a percentage to GNP. Using quarterly data of US over the period from 1955:3 to 1984:1 for macroeconomic aggregates and using parameters of microeconomic data studies, the model is calibrated. The simulation results show that the estimates of welfare loss are sensitive to the definition of money balances and to the length of time households are constrained to hold cash. For a moderate annual inflation rate of 10 percent, the welfare loss is about 0.39 percent of GNP where money is taken as M1 and the individual holds cash for one quarter. But this cost is substantially reduced to 0.1 percent for the monetary base and further when the individual is constrained to hold cash for one month.

Extending Cooley and Hansen (1989) CIA model, the revenue and welfare implications of different taxes are analysed in Cooley and Hansen (1991). Using calibration and simulation techniques they show that the presence of distortionary taxes (taxes on capital and labour) doubles the welfare cost of a given steady-state inflation policy. A permanent zero-inflation policy with other distortionary taxes held at their benchmark level improves welfare by 0.33 percent of GNP. In another type of zero-inflation policy that is assumed to be permanent, and where the lost revenue from inflation tax is replaced by raising distortionary taxes, the welfare cost is higher than the original policy with 5 percent inflation. Moreover, a temporary reduction of inflation rate to zero makes the economy worse-off due to inter-temporal substitutions.

Cooley and Hansen (1989) measure the welfare cost under the assumption of cash only economy. However, in Cooley and Hansen (1991), the availability of costless credit is taken into account. Gillman (1993) introducing the Baumol (1952) exchange margin allows the consumer to decide to purchase goods for cash or credit with further assumption of costly credit. Consumers, while making a decision, weigh the time cost of credit against the opportunity cost of cash. The interest rate elasticity and welfare loss from a costly credit set-up is compared with the cash-only and costless credit economies. Using US average annual data from 1948 to 1988, the authors show that both interest elasticity and welfare cost in costly credit economies are greater than the cash-only and costless credit settings. The cost associated with 10 percent inflation is 2.19 percent of income compared to 0.58 percent and 0.10 percent for cash-only and costless credit economies respectively.

Eckstein and Leiderman (1992) in addition to Cagan semi-log model use Sidrauski-type money-in-utility (MIU) model to study seigniorage implications and welfare cost of inflation for Israel. The parameters of the intertemporal MIU model are estimated by using Generalised Methods of Moments (GMM), on quarterly data from

1970:I to 1988:III. The simulation results show that inflation rate of 10 percent has welfare loss of about 1 percent of GNP. The degree of risk aversion is identified as an important determinant of welfare cost and loss of lower inflation rates predicted by the inter-temporal model which is higher than that calculated from the Cagan-type model. The welfare cost estimates from the inter-temporal model are more reliable as it produced national income ratios and seigniorage ratios much closer to the actual values.

López (2000) following Eckstein and Leiderman (1992) inter-temporal model studies the seigniorage behaviour and welfare consequences of different inflation rates in Columbia. For the period 1977:II to 1997:IV the parameters of the model are estimated using GMM. Welfare loss due to increase in inflation from 5 percent to 20 percent is 2.3 percent of GDP, and 1 percent of GDP when inflation increases from 10 percent to 20 percent. Eckstein and Leiderman's (1992) model with some modifications is employed in Samimi and Omran (2005) to study the consumption and money demand behaviour from inter-temporal choice. The welfare cost of inflation is calculated using annual data from 1970 to 2000 for Iran. Welfare cost is found to be positively related to the inflation rate. While the welfare cost of 10 percent inflation is 2 percent of GDP, the cost is 4.37 percent of GDP for an inflation rate of 50 percent.

Several studies, including Bailey (1956), Wolman (1997), and Eckstein and Leiderman (1992), have pointed out that the estimates of welfare cost depend largely on the money demand specification. Lucas (1994, 2000) estimates the double log money demand function in explaining the actual scatter plot than the semi-log functional form for the period 1900-1994. Bailey's consumer's surplus formulae are derived and used to compute the welfare cost of inflation for both semi-log and log-log money demand functions. Based on the log-log demand curve, the welfare gain from moving from 3 percent to zero interest rate is about 0.01 percent of real GDP, while for semi-log estimates it is less than 0.001 percent.

Simonsen and Rubens (2001) theoretically extended Lucas (2000) transactions technology model to allow for the interest bearing assets. Simonsen and Rubens (2001) reach the conclusion that with interest earning assets included, the upper bound lies between Bailey's consumer surplus measure and Lucas' measure of welfare cost. Bali (2000) using different monetary aggregates calculated welfare cost using two approaches, Bailey's welfare cost measure and the compensating variation approach. Error correction and partial adjustment models are applied to find the long interest elasticities and semi-elasticities. For the quarterly data ranging from 1957:I to 1997:II, the empirical results show that constant elasticity demand function accurately fits the actual US data. The loss to welfare associated with 4 percent inflation turned out to be 0.29 percent of income (benchmark to be zero nominal interest rate) and the welfare gain in moving from 4 percent to zero inflation is 0.11 percent of income with currency-deposit specification, while welfare cost is around 0.18 percent of GDP when monetary base is used whereas with M1 the loss is much higher than the earlier two cases (approximately 0.55 percent of GDP).

Serletis and Yavari (2003) calculate and compare the welfare cost of inflation for two North American economies, namely Canada and the United States, for the period 1948 to 2000. Following Lucas (2000), they assume a constant interest elasticity of money demand function. They show 0.22 interest rate elasticity for Canada, while 0.21

for the USA, much lower than 0.5 assumed by Lucas (2000). Welfare cost is measured using the traditional Bailey's approach and Lucas' compensating variation approach. The welfare gain of interest rate reduction from 14 percent to 3 percent (consistent with zero inflation) for the US is equivalent to 0.45 percent increase in income. Reducing the nominal interest rate further to the optimal deflation rate yields an increase in income by 0.18 percent. For Canada, the distortionary costs are marginally lower, reducing the rate of interest from 14 percent to 3 percent increases the real income by 0.35 percent, and by further reducing to Friedman's zero nominal interest rate rule it resulted in a gain of 0.15 percent of real income.

Serletis and Yavari (2005) estimate the welfare cost of inflation for Italy. Estimating a long-horizon regression, they find that interest elasticity is 0.26. Using the same approaches of calculating welfare cost of inflation as in Serletis and Yavari (2003), they show that lowering the interest rate from 14 percent to 3 percent yield a benefit of about 0.4 percent of income. The same analysis was extended in Serletis and Yavari (2007) to calculate the direct cost of inflation for seven European countries, Ireland, Australia, Italy, Netherlands, France, Germany, and Belgium. The welfare cost estimates of these countries showed that the cost is not homogeneous across these countries and is related to the size of the economy. The welfare cost was lower for Germany and France than for the smaller economies.

The welfare costs of anticipated inflation are the distortions in the money demand brought about by the positive nominal interest rate so the major emphasis of studies after Lucas (2000) is first to check for the proper money demand specification. Ireland (2007) finds that Cagan-type semi-log money demand function is a better description of post 1980 US data. For the quarterly data from 1980 to 2006, the semi-elasticity is estimated to be 1.79 and the welfare cost of inflation is measured using consumer's surplus approach of calculating the area under the money demand curve. For a 2 percent inflation rate the welfare cost is 0.04 percent of income and 0.22 percent of income for the 10 percent inflation rate. Price stability is taken as a benchmark instead of Friedman's optimal deflation policy.

Gupta and Uwilingiye (2008) measure the welfare cost of inflation for South Africa. The double log and semi-log money demand functions are estimated using Johansen's cointegration method and the long-horizon regression method. The study apart from estimating the proper money demand function analyses whether time aggregation affects the long-run nature of relationship or not. Interest elasticity and semi-elasticity estimates are used to measure the welfare cost of inflation using Bailey's traditional approach and Lucas' compensating variation approach. The estimation results show that for the period 1965:II to 2007:I, compared to the cointegration technique, the long-horizon approach gives a more consistent long-run relationship and welfare estimates under the two-time aggregation sampling methods. The welfare cost of target inflation band of 3 to 6 percent lies between 0.15 and 0.41 percent of income.

In sum, the review of literature shows that the welfare cost of inflation has found its initial application in hyperinflation countries. In Bailey (1956), Marty (1967) and Barro (1972), and in many other studies, the welfare cost is measured mainly for the developed countries with stable inflation like the US and now it is extended to European countries and South Africa. This issue also needs to be addressed for developing

countries where inflation rate is primarily determined by money supply. For policy-makers to conduct an effective monetary policy, it is important to estimate the welfare cost of inflation based on a stable estimated money demand function. As far as we know, this article is one of the first to calculate the welfare cost of inflation in Pakistan.

Second, there is also a transition from partial equilibrium analysis to general equilibrium analysis to calculate the welfare cost of inflation. To provide general equilibrium rationale for holding money, we will use the Money-in-the-Utility Function model. Other general equilibrium models like Cash-in-Advance and transaction time technology models are relatively more sophisticated approaches but we cannot apply these due to two main reasons. First, the underlying assumptions of the models regarding distinction among the cash and credit goods do not seem effective in developing countries' market environment. Secondly, the studies employing the CIA constraint in the Real Business Cycle (RBC) model use the calibration technique, which makes use of the results of studies using microeconomic data. For most of the developing countries in general and specifically for Pakistan the data on non-durable (cash) goods and durable (credit) goods are not available. Similarly, the impact of inflation on marginal decisions like working hours, capital accumulation and investment decisions at micro level have not been addressed for Pakistan.

(b) Pakistan-Specific Empirical Money Demand Studies: A Review

Welfare cost estimates are highly sensitive to the specification of money demand function. In this section we, therefore, provide a review of recent developments on this issue in Pakistan. From a theoretical prospective, the main determinants of money demand are the opportunity cost variables and the scale variable proxied by income. Mangla (1979) was the first who tested the empirical validity of these variables for Pakistan. In particular, using both GNP and permanent income as proxies for scale variables and both annual yield on government bonds and call money rate as a proxy for the opportunity cost of holding money, Mangla estimated the real and money demand for M1 over the period from 1958-1971. He found that the income elasticity of nominal demand for money was significantly greater than one and interest elasticity ranged from –0.04 to –0.16 for call money rate, while for the bonds' yield it ranged from –0.31 to –0.96. He shows that while the income elasticity is greater than one, the interest elasticity turns out to be low, –0.02 to 0.02, for call money rate and positive for bonds' yield.

Khan (1980) estimates the demand for money and real balances by defining money as M1 and M2 for the period 1960 to 1978. The main objective of his study was to identify the correct scale variable—current or permanent income—for money demand function. Applying the ordinary least squares (OLS) method, he finds that the income elasticity for both nominal and real money demand functions is significantly greater than one, implying diseconomies of scale. He further argues that both permanent and current income give approximately similar results, lending no superiority to one measure over the other. For nominal money demand functions (M1 and M2), he reports that the interest elasticity is insignificant but for real money demand it has the expected negative sign.

Similar analysis of finding appropriate scale and opportunity cost variables for the money demand function was carried out in Khan (1982). The scale variables were taken to be permanent income and measured income, while the opportunity cost variables were

the interest rate (call money rate, interest on time deposits) and the expected and actual inflation rates. Using the Cochrane-Orcutt technique the demand functions of M1 and M2 were estimated for six Asian developing countries (Pakistan, India, Malaysia, Thailand, Sri Lanka, and Korea) for the period 1960 to 1978. For Pakistan with M1 definition of money, he finds that there is no difference between permanent and measured income elasticities. His estimates provide evidence that income elasticity is greater than one, representing diseconomies of scale. Money demand is significantly explained by interest on time deposits and interest elasticity ranged from –0.42 to –0.44. For broader money (M2), he reports that the income elasticity is greater than for M1, and interest elasticity ranges from –0.37 to –0.39. For Pakistan, inflation and expected inflation tend to affect money demand but the magnitude (–0.05) is much less than the coefficient of interest rate. Khan (1982) also reaches the same conclusion as in Khan (1980) that interest rate is the proper opportunity cost variable in money demand function.

Nisar and Aslam (1983) estimate the term structure of time deposits and substitute the parameters in the money demand function, using data over the period from 1960 to 1979. They find that the coefficient of term structure for both M1 and M2 monetary aggregates is negative and has a smaller magnitude for the M2 definition of money ranging from –0.51 to –0.73. They also show that time deposits are positively related to interest rate (representing own rate of return), whereas interest rate has a negative effect on currency; so, overall, the magnitude of interest elasticity is low for M2 due to the inclusion of time deposits. Consistent with Khan (1982), they conclude that money demand is elastic with respect to the scale variable, while the coefficient of inflation rate bears a positive sign and is statistically not significant. Secondly, the study compares the stability of money demand function estimated by using term structure against the conventional money demand function with simple average interest rate (call money rate). The covariance analysis shows that the term structure money demand function remained stable while the conventional function does not pass the stability test.

Developing countries like Pakistan lack sophisticated financial systems. Here currency constitutes a large proportion of total monetary assets. Qayyum (1994) using data from 1962:I to 1985:II estimates the long-run demand for currency holding. He shows that currency demand is determined by interest rate defined as bonds rate, the rate of inflation and income. With the coefficient of income at approximate unity, the money-income proportionality hypothesis is tested. Further, he argues that money-income proportionality holds and imposing this restriction, the steady state demand for currency turns out to be related to inflation and the bonds rate. The coefficients of inflation and interest are negative and significant showing that people can substitute between currency and real goods, and also between currency and financial assets.

Hossain (1994) estimates the money demand for both the real narrow (M1) and broad money (M2) balances for the two sub-periods ranging from 1951 to 1991 and 1972 to 1991. The double log specification of money demand function is used with income, interest rate (government bond yield, call money rate) and inflation rate as the explanatory variables. The results for the sample period from 1972 to 1991 are more encouraging where the income elasticity for broad money is around unity and about 0.86 for the narrow money. Interest elasticity in absolute terms is greater for narrow money (–0.54) than for M2 (–0.05). The results for both the sample periods show that real

money balances are not cointegrated with the inflation rate and that the narrow money demand is more stable than the broad money demand function.

The financial sector reforms of the 1980s increased the interest in money demand function. Khan (1994) and Tariq and Matthews (1997) investigated the impact of financial liberalisation on money demand. In particular, Khan (1994) examines the effect of these reforms on the stability of money demand. The Engle-Granger two-step method of cointegration is used to estimate the money demand function using quarterly data starting from 1971:III to 1993:II. The results of cointegration analysis for double-log money (nominal M1 and M2) demand function show that demand for broader money is determined by real income, nominal interest rate of medium term maturity real interest rates, and the inflation rate. The cointegration relationship holds for all the arguments except short-term and medium-term nominal interest rates in the context of M1 definition.

The second study on the effects of financial reforms is Tariq and Matthews (1997) that investigated the impact of deregulation on the definition of monetary aggregates. In this study divisia monetary aggregates are compared to simple monetary aggregates in order to find the stable money demand function. The conventional money demand function is estimated with the scale and opportunity cost variable and the opportunity cost is taken as differential of interest on an alternative asset and own rate of return on the given monetary aggregate. Cointegration analysis shows that demand for all the four monetary aggregates, M1, M2, Divisia M1 and Divisia M2 is positively related to the scale variable and negatively to the opportunity cost variable. Income elasticity is seen to be greater than unity implying that velocity has a decreasing trend. The error correction model (ECM) is used to estimate the short-run dynamic money demand function, which shows that all the four monetary aggregates are equally good in explaining the money demand function and there is no superiority of divisia aggregates over the simple-sum monetary aggregates.

There is a difference between the money demand behaviour of household and business sectors in studies relating to sectoral money demand in developed countries. Its first application in Pakistan is Qayyum (2000) who studies the demand for money by the business sector. Owing to the difference in the behaviour of business sector, the total sale is taken as the scale variable instead of income. He shows that the long-run demand for M1 is determined by sales and inflation rate. The sales/transactions elasticity of business sector's demand for real balances is unitary. In the long run the demand for money is not determined by the interest rate, but the short-run dynamic ECM shows that money demand is determined by changes in the return on saving deposits, changes in inflation rate, and movements in the previous money holding.

Qayyum (2001) estimates the money demand function at aggregate level and for both the household and business sectors using quarterly data from 1959:III to 1985:II. He finds that all the three money demand functions are sensitive to income, inflation rate and interest rate. He concludes that bonds rate is the relevant opportunity cost variable in aggregate and household money demand functions. For the business sector, the appropriate interest rate representing opportunity cost is the rate of interest on bank advances. The money-scale variable proportionality holds in all the money demand functions. The scale variable is defined as income/real GDP for the aggregate and

household money demand function while for the business sector it is real sales. The business sector demand for real balances is explained by own rate of return and the inflation rate. The money-sales proportionality is shown to hold in the long run. The results from ECM show that in the short run interest rate is an important variable determining the aggregate demand for real balances and liquidity demand of the business sector.

Another study by Qayyum (2005) estimates the demand for broader money M2 at the aggregate level for the annual data from 1960 to 1999. This study reaches similar conclusion as Qayyum (2001) that the major determinants of money demand are own rate of return (call money rate) and opportunity cost variables (inflation rate and government bond yield) and income. However, the magnitude of coefficients is high for both the interest rates.

Using annual data from 1972 to 2005, Hussain, *et al.* (2006) estimated the demand for money; money is defined as monetary base, M1 and M2. The study finds that there is no cointegration and unit root in the data series. They model the demand for all the three monetary aggregates as a function of the real GDP, inflation rate, financial innovation and the interest rate on time deposits. They find that the long run income elasticity ranges from 0.74 to 0.779 and interest elasticity ranges from –0.344 to –0.464. Of all the three definitions of money M2 is found to better explain the long-run stable money demand function.

Ahmad, *et al.* (2007) estimate the long-run money demand function using the error correction model. The conventional money demand function with income and call money rate is estimated for the period 1953 to 2003. The results show that both the arguments of money demand function have theoretically the correct signs for M1 and interest semi-elasticity is –0.012. The interest rate coefficient is positive and insignificant for real M2. For both narrow money M1 and broad money M2 the money-income proportionality does not hold.

In this study we want to calculate the welfare cost of inflation based on the estimated parameters of a stable money demand function. The studies on welfare cost of inflation suggest that we have to define money in the narrowest form, like monetary base or M1 so that the interest rate is the opportunity cost of holding money.[5] Estimating the demand for broader monetary aggregate (M2) is not relevant for our analysis because it includes some interest bearing assets; the interest coefficient in most of the studies turned out to be positive or insignificant showing that interest rate is own rate of return rather than an opportunity cost variable for M2.

The welfare cost is a steady state analysis for which the money-income proportionality is assumed to hold. Following the social welfare loss of inflation analysis we need to (newly) re-estimate the money demand function taking the ratio of money balances to income (scale variable) as the dependent variable with a single argument—the nominal interest rate. We estimate demand functions defining money as monetary base, narrow money M1 and disintegrating M1 into its constituent components and estimate the demand functions of demand deposit and currency.

[5]Hussain (1994) argues that narrow money demand in Pakistan is more stable than broad money demand.

3. ESTIMATION METHODS

Following Bali (2000), we estimate the currency-deposit model to analyse the welfare cost of inflation in Pakistan. The rationality of employing the currency-deposit model is that both currency and deposits have different opportunity costs. The implicit cost of holding currency is the nominal interest (i), while that of demand deposit is the difference between the nominal interest rate (i) and the interest on deposits (i_d). The studies that lump both the currency and demand deposits together as non-interest bearing assets are likely to overstate the true cost of inflation [see, for details, Lucas (1994, 2000)]. Another advantage of this disintegrated asset model is that the single monetary asset models are the nested models of this broader model.

When estimating the model, we ignore uncertainty and labour-choice, focusing on the implications of the model for money demand and the welfare cost of inflation. Further, we assume that the representative household derives utility from consumption good (c_t) and flow of services from the real money balances that consist of currency (m_t) and demand deposits (d_t). In particular, the utility function takes the following form:

$$\sum_{t=0}^{\infty}(1+\rho)^{-1}U(m_t, c_t, d_t) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

where ρ is the subjective rate of time preference. In Equation (1), the utility function is assumed to be increasing in all the three arguments, strictly concave and continuously differentiable. The economy-wide budget constraint of the household sector, in real units, is given by

$$(1+\pi_{t+1})m_{t+1} + (1+\pi_{t+1})d_{t+1} + k_{t+1} + (1+r_{t+1})^{-1}b_{t+1} = m_t + d_t(1+i_d(t))$$
$$+k_t(1-\delta) + b_t + f(k_t) - c_t + h_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

The budget constraint indicates that a household can transfer resources from one period to the next by holding real money stock consisting of non-interest bearing real currency (m_t), interest bearing real demand deposits (d_t), bonds (b_t), and physical capital (k_t). Given the current income $f(k_t)$, its assets and any net transfer (h_t) from the government sector, the household allocates its resources among current consumption (c_t) and savings (left side of Equation (2)). The real rate of return on bonds $(1+r_{t+1})$ is equal to $(1+i_{t+1})/(1+\pi_{t+1})$, where i_{t+1} denotes the nominal return on bonds held from t to $t+1$, whereas $(1+i_d)$ is the return on demand deposits.

A household maximises its utility Equation (1) subject to budget constraint Equation (2). Solving the optimisation problem for two periods, t and $t-1$, yields the following first-order Euler equations:

$$\frac{u_m(c_t, m_t, d_t)}{u_c(c_t, m_t, d_t)} = -1 + (1+\rho)(1+\pi_t)\frac{(1+r_t)}{(1+\rho)} = i_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (3)$$

$$\frac{u_d(c_t, m_t, d_t)}{u_c(c_t, m_t, d_t)} = -1(1+i_d) + (1+\rho)(1+\pi_t)\frac{(1+r_t)}{(1+\rho)} = i_t - i_d(t) \quad \ldots \quad \ldots \quad (4)$$

Euler Equations (3) and (4) indicate that the marginal rate of substitution between money and consumption and between deposits and consumption is equal to the opportunity costs of respective assets. These first order Euler equations are the implicit form of asset demand functions, which can be estimated by assuming some specific form of utility function.

In order to derive the implications of the model for welfare costs of inflation using the Lucas compensation variation approach, the following CES isoelastic utility function is used:

$$u(c_t, m_t, d_t) = \frac{\left\{\left[\gamma_1^{1/\theta} c_t^{(\theta-1)/\theta} + \gamma_2^{1/\theta} m_t^{(\theta-1)/\theta} + \gamma_3^{1/\theta} d_t^{(\theta-1)/\theta}\right]^{\theta/(\theta-1)}\right\}^{1-\frac{1}{\sigma}}}{1-\frac{1}{\sigma}} \quad \ldots \quad (5)$$

where $\theta > 0$ is the elasticity of inter-temporal substitution. Substituting the marginal utilities from Equation (5) into Euler Equations (3) and (4) gives the following real currency and real deposit demand functions:

$$m_t = \left(\frac{\gamma_2}{\gamma_1}\right) i_t^{-\theta} c_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (6)$$

$$d_t = \left(\frac{\gamma_3}{\gamma_1}\right) (i_t - i_d(t))^{-\theta} c_t$$

The steady state analysis of welfare cost of inflation requires that the proportion of income held as cash, should be independent to the growth in real income. This implies that velocity remains constant.[6] Under the steady state we write the money demand function as the ratio of real money balances to the real scale variable. It further requires that both currency and demand deposits have the same interest elasticities (θ). It may be recalled that the cost of holding money defined as demand deposits, is the disparity between the yield on other assets (i_t) and interest on deposits (i_d) when the banks are operating at zero profit condition, $i_d = (1 - \mu) i_t$, where μ is the reserve ratio. The zero profit condition implies that the opportunity cost of holding deposits is $(i_t - i_d) = \mu i$. Below, Equation (7) presents the demand function for demand deposits.

$$d_t = \left[\frac{\gamma_3}{\gamma_1}\right] (\mu i_t)^{-\theta} c_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

[6]Velocity becomes function of the interest rate and it is transformed to money demand function, which is integrated under Bailey's approach to get welfare cost as a proportion of scale variable.

$$u(c_t, m_t, d_t) = \left(\frac{1}{1-\omega}\right)\left[\left(\frac{1}{1-\gamma}\right)\left(c_t^{1-\gamma} - 1\right) + \left(\frac{\varphi}{1-\alpha}\right)\left(m_t^{1-\alpha} - 1\right) + \left(\frac{\phi}{1-\beta}\right)\left(d_t^{1-\beta} - 1\right)\right]^{1-\frac{1}{\omega}}$$

$$m_t = \varphi^{1/\alpha} i_t^{-1/\alpha} c_t^{\gamma/\alpha} \qquad d_t = \phi^{1/\beta} (i_t - i_d(t))^{-1/\beta} c_t^{\gamma/\beta}$$

where γ/α and γ/β are the scale elasticities of demand for real currency and real deposits and 1/α and1/β are elasticities of currency and deposits with respect to their respective opportunity costs. Unitary scale elasticities require that α = β = γ must hold, which implies that the assets demand functions have same opportunity cost elasticities.

For the single monetary asset the utility function in money-in-utility (MIU) framework takes the form as:

$$\sum_{t=0}^{\infty}(1+\rho)^{-1}U(m_{t,}c_{t},)$$

Solving the optimisation problem with changing the budget constraint without the role of demand deposits gives the money demand function equivalent to the currency demand function presented in Equation (6).

3.1. Money Demand Specification

To compute the welfare cost function we estimate both the double log and semi-log money demand functions.

3.1.1. *Double-log Money Demand Function*

To calculate the welfare cost of inflation we are interested specifically in the effect of opportunity cost (nominal interest rate) on money holding. The demand for real balances is given by

$$\left(\frac{M_t}{P_t}\right)=L(i_t,y_t)$$

where the left side in the above equation is the ratio of money stock to price level showing the demand for real balances as function of nominal interest rate i_t, and y_t is the real income. In the long-run, the liquidity demand function takes the following form.

$$L(i\ ,y)=m(i)y \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

Equation (8) indicates that money demand is proportional to income. It is evident that the estimates of the income elasticity of money demand (i.e., M1, M2 and currency) obtained for Pakistan tend to be around unity [Qayyum (1994, 2000, 2001, 2005)]. Therefore, the unitary scale (income) elasticity restriction is imposed which enables us to estimate the money demand function (*m(i)*) defined as the ratio of real money balances to real income with the single argument defined as the opportunity cost of holding money.

$$m/y=m(i) \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

Equations (6) and (7) are in the form of (8) and dividing by the scale variable can be converted into the final form of demand function required for the analysis of welfare cost.

$$\left(\frac{m_t}{c_t}\right)=\left(\frac{\gamma_2}{\gamma_1}\right)i^{-\theta}$$

$$\left(\frac{d_t}{c_t}\right)=\left(\frac{\gamma_3}{\gamma_1}\right)(\mu i)^{-\theta}$$

These equations take the form of Equation (9) and can be written in the following double log form:

$$m(i) = e^{\alpha_0} i^{-\alpha_1} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

$$d(\mu i) = e^{\alpha_2} (\mu i)^{-\alpha_1} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (11)$$

where the dependent variables are taken as ratio to scale variable and welfare cost is expressed as the percentage of GDP.

3.1.2. *Semi-log Money Demand Function*

The standard utility functions mostly yield double-log money demand function, but the semi-log models have gained great applications in money demand literature for its seigniorage implications. A number of studies, such as Lucas (2000), Bali (2000) and Gupta and Uwilingiye (2008), have estimated both the double log and semi-log money demand functions and compared welfare costs associated with both the specifications. Following these studies, we also estimate the semi-log money demand function along with the log-linear function and judge the sensitivity of the estimated welfare cost for the two models towards low interest rates.

To compare the semi-log model with the derived double log currency-deposit model we restrict both currency and demand deposits to have the same interest semi-elasticity. The demand functions for currency and deposits under the semi-log specification are given as follow:

$$m(i) = e^{\alpha_0 - \alpha_1 i} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (12)$$

$$d(i) = e^{\alpha_2 - \alpha_1 (\mu i)} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (13)$$

After estimating the steady state money demand functions the welfare cost will be computed using both Bailey's and Lucas' measures of welfare cost. What follows below, is a brief discussion of these welfare cost measures.

3.2. Welfare Cost of Inflation and Money Demand Function

3.2.1. *Bailey's Consumer Surplus Approach*

The first attempt to measure the welfare cost of anticipated inflation is credited to Bailey (1956) wherein the nominal interest rate is the opportunity cost of holding money. The inflationary finance/anticipated inflation is excise tax on real cash holding; and the welfare cost is the loss in consumer surplus and is measured as the area under the money demand curve. Changes in inflation rate are related to changes in nominal interest rate through the Fisher hypothesis that holds for Pakistan [Hassan (1999)]. Thus, the welfare cost is measured as the loss in consumer surplus not compensated by total revenue. This can be described as follows:

$$w(r) = \int_{m(r)}^{m(0)} \psi(x)dx = \int_0^r m(x)dx - rm(r) \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (14)$$

where $m(r)$ is money demand function and $\psi(x)$ is the inverse demand function. *m* is defined as ratio of money to income, the welfare function *w* is the function of income; therefore, welfare loss is defined as proportion of income.

3.2.1.1. *Welfare Cost of Inflation for Semi-log Money Demand Function*

Bailey (1956), Marty (1967), Friedman (1969) and Tower (1971) have used the Cagan semi-log money demand function. All these studies were based on hyperinflation economies, and welfare gain for this specification comes largely by moving from high interest to low interest rates, while for the interest rate approaching zero, the solution is trivial.

(a) Single Monetary Asset Model

When monetary stock is taken to be monetary base or M1 (single monetary asset model) the semi-log money demand function is given as follows:

$$m(r) = e^{\alpha_o - \alpha_1 i}$$

Substituting the money demand function in Equation (14) gives the following welfare cost measure

$$\int_0^r e^{\alpha_0 - \alpha_1 x} dx - i\left(e^{\alpha_0 - \alpha_1 i}\right)$$

$$WC = \frac{e^{\alpha_0}}{\alpha_1}\left[1 - e^{-\alpha_1 i}(1 + i\alpha_1)\right] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (15)$$

where α_o is the intercept in money demand function and α_1 is the interest rate related semi-elasticity of money demand.

(b) Currency-Deposit Model

For the modified money-in-utility function, which allows for the distinct role of currency and demand deposits, the welfare cost takes the following form:

$$WC = \int_0^i f(x)dx - if(i) + \int_0^{\mu i} g(x)dx - \mu i g(\mu i)$$

$$WC^{Semi-\log} = \frac{e^{\alpha_0}}{\alpha_1}\left[1 - e^{-\alpha_1 i}(1 + \alpha_1 i)\right] + \frac{e^{\beta_0}}{\beta_1}\left[1 - e^{-\beta_1 \mu i}(1 + \beta_1 \mu i)\right] \quad \ldots \quad \ldots \quad (16)$$

where demand for currency is $f(x) = e^{\alpha_0 - \alpha_1 i}$ and semi-log demand function for deposits is $g(x) = e^{\beta_0 - \beta\mu i}$. The first term in Equation (16) represents the dead weight loss accruing from currency while the second term is the dead weight loss measured for demand deposit. For currency, the integral runs from zero to positive nominal interest (*i*) and for demand deposits it runs from zero to opportunity cost of holding demand deposits

(μi). Under the restricted model, where both currency and deposits are restricted, the semi-elasticities should have to be the same, $\alpha_1 = \beta_1$.

3.2.1.2.Welfare Cost of Inflation for Double log Money Demand Function

(a) Single Monetary Asset Model

The double log money demand specification for a single monetary asset (i.e., monetary base or M1) is given as follows:

$$m(i) = e^{\alpha_0} i^{-\alpha_1}$$

So, the welfare cost formula is derived by substituting the money demand function in Equation (14), which is presented as follows:

$$WC = e^{\alpha_0} i^{1-\alpha_1} \left[\frac{\alpha_1}{1-\alpha_1} \right] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (17)$$

where α_o and α_1 are the intercept and slope coefficient of double log money demand function respectively.

(b) Currency-Deposit Model

For the double log demand for currency and deposits, the expression given in Equation (14) becomes as follows:

$$WC^{double-\log} = \left(\frac{\alpha_1}{1-\alpha_1} \right) e^{\alpha_o} i^{1-\alpha_1} + \left(\frac{\beta_1}{1-\beta_1} \right) e^{\beta_o} (\mu i)^{1-\beta_1} \quad \ldots \quad \ldots \quad \ldots \quad (18)$$

The welfare cost formula shows that the cost is entirely in terms of α_o, α_1, β_o and β_1, parameters of the estimated asset demand functions and their opportunity costs.

3.2.2. *Lucas Compensating Variation Approach*

Lucas in arriving at a welfare measure starts with the assumption that two economies have similar technology and preferences; the only difference is in the conduct of monetary policy. In one of the economies Friedman's zero interest rate policy is adopted whereas in the other economy, the interest rate is positive. He defines the welfare cost of inflation as compensation in income (defined as percentage of income) required to leave the household (living in the second economy), being indifferent to live in either of the two economies.

The left side of Equation (19) shows the welfare in second economy with a positive interest rate and the right hand side is the characterisation of the first economy operating at deflation policy. *w(i)* is the measure of income compensation or the welfare cost of inflation.

$$u[1+w(i), \overline{m}(i), \overline{d}(\mu i)] = u[1, \overline{m}(0), \overline{d}(0)] \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (19)$$

Lucas has given two measures of welfare cost for the two specifications of long-run money demand function due to their different behaviour at low interest rates; (a) Square-Root Formula, and (b) Quadratic Approximation.

3.2.2.1. *Welfare Cost of Inflation for Semi-log Money Demand Function and Quadratic Approximation*

The semi-log money demand specification originally due to Cagan (1956) and Bailey (1956) gives rise to a quadratic formula for the welfare cost of inflation. Under this specification there is satiation in money demand, and thus, the quadratic formula derived for this specification is sensitive to high interest rate. Wolman (1997) and Bakhshi (2002) show that for the semi-log model there is satiation in asset holding $m(0)$ and $d(0)$ in Equation (19), representing maximum currency and demand deposits' holdings at zero interest rate. The above mentioned studies also showed that under satiation the welfare gain of moving from positive inflation to zero inflation is higher compared to the gains of moving further to Friedman's zero interest rules.

To derive the quadratic formula from Equation (19) the second-order Taylor series expansion is applied to the welfare function around zero interest rate.

$$w(i) = w(i)\big|_{i=0} + w'(i)\big|_{i=0}(i-0) + \frac{1}{2}w''(i)\big|_{i=0}(i-0)^2 = \frac{1}{2}i^2\left[-\overline{m}'(0) - \mu^2\overline{d}'(0)\right] \quad \ldots (20)$$

(a) Single Monetary Asset Model

For the single-monetary-asset model, Equation (19) takes the following form:

$$u\left[1 + w(i), \overline{m}(i)\right] = u\left[1, m(0)\right]$$

And the welfare cost of inflation is expressed as follows:

$$w(i) = \frac{1}{2}\overline{m}(0)\eta i^2 \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (21)$$

where η is the semi-elasticity of demand for M1 or monetary base with respect to interest rate.

(b) Currency-Deposit Model

Assuming that demand deposits and currency have the same semi-elasticity (restricted case) the welfare loss formula (20) is transformed as follows: [7]

$$w(i) = \frac{1}{2}\eta i^2\left[\overline{m}(0) + \mu^2\overline{d}(0)\right] \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (22)$$

Given the semi-log demand functions $\overline{m}(i) = \overline{m}(0)e^{-\eta i}$, $\overline{d}(\mu i) = \overline{d}(0)e^{-\eta(\mu i)}$, $\overline{m}(0)$ and $\overline{d}(0)$ initial conditions are calculated by assuming $\overline{m}(i)$ and $\overline{d}(i)$ functions pass

[7]For the unrestricted model that allows for different semi-elasticities for currency and deposits the welfare cost formula is written as $w(i) = \frac{1}{2}\left[\eta\overline{m}(0) + \varepsilon\mu^2\overline{d}(0)\right]$ where η is the semi-elasticity of currency and ε is the semi-elasticity of demand deposits.

through the values of currency holdings, deposits, and interest rates observed at the end of the sample period. Semi-elasticity η is measured from long-run semi-log asset demand functions.

3.2.2.2. *Welfare Cost of Inflation for Double log Money Demand Function and Square-Root Formula*

The Square-Root formula is applicable if double log is the proper specification of money demand function. Under this specification, as the nominal interest rate approaches zero, the demand for real balances becomes arbitrarily large [Ireland (2007)], and Equation (19) takes the following form:

$$u\left[1+w(i),\overline{m}(i),\overline{d}(\mu i)\right]=u\left[1,\infty,\infty\right].$$

(a) Single Monetary Asset Model

Welfare cost formula for a single monetary aggregate (Monetary base or M1) without assigning distinct roles to currency and deposits is given as:

$$w(i)=\left[1-\left(e^{\alpha_o}\right)i_t^{1-\alpha_1}\right]^{\alpha_1/(\alpha_1-1)}-1 \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (23)$$

Where $\alpha_1$is the slope (interest elasticity) and α_0 is the intercept term in log-linear model with single monetary aggregate.

(b) Currency-Deposit Model

For currency-deposit welfare cost is calibrated by employing estimated parameters from log-log specification of the demand deposits and currency demand functions.

$$w(i)=\left[1-\left(e^{\alpha_o}\right)i_t^{1-\alpha_1}-\left(e^{\alpha_2}\right)\mu_t^{1-\alpha_1}i_t^{1-\alpha_1}\right]^{\alpha_1/(\alpha_1-1)}-1 \quad \ldots \quad \ldots \quad \ldots \quad (24)$$

This model is derived from CES utility function where α_1 is the interest elasticity for both the assets demand functions. The welfare cost of inflation is measured by empirically estimating the money demand function parameters. Specifically, welfare costs are measured as the value of welfare measures evaluated at different nominal interest rates.

3.3. Estimation Procedure and Empirical Technique

The main objective of the study is to estimate the stable money demand function for Pakistan and to compute the welfare cost of inflation. The cointegration technique is used to determine the long-run relationship between different time series. Specifically, we use the autoregressive distributed lag (ARDL) model to estimate the long-run interest elasticity and semi-elasticity of money demand function. This approach has an advantage that it provides long-run coefficients even for small data sets and it does not require all the regressors to be integrated of the same order that is I(1). That is, it can be applied even in the case where the regressors have a mixed order of integration; the only restriction is that none of the variable should be I(2) or integrated of order greater than 1. Further, the problem of endogeneity also does not affect the bounds test for cointegration.

To apply the bounds test for cointegration, the Unrestricted Error Correction Model (UECM) representation of double log money demand function: $m(r) = e^{\alpha_0} i^{-\alpha_1}$ takes the following form:

$$\Delta \log(m_t) = \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta \log(m_{t-i}) + \sum_{i=0}^{p} \beta_{2i} \Delta \log(i_{t-i}) + \lambda u_{t-1} + \varepsilon_t \quad \ldots \quad (25)$$

In this equation m_t is real money balances' taken ratio to real GDP, i_t is the interest rate, β_0 is the intercept, β_1 and β_2 are the slope coefficients and λ is the coefficient of error correction term u_{t-1}; this term shows the correction of the model towards the long-run equilibrium. If the error correction term is replaced by the lagged variables, we get the ARDL model incorporating short-run and long-run information.[8]

$$\Delta \log(m_t) = \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta \log(m_{t-i}) + \sum_{i=0}^{p} \beta_{2i} \Delta \log(i_{t-i}) + \beta_3 \log(m_{t-1}) + \beta_4 \log(i_{t-1}) + u_t \quad \ldots \quad (26)$$

Similarly to estimate the interest, the semi-elasticity of money demand, the ARDL model takes the following form

$$\Delta \log(m_t) = \beta_0 + \sum_{i=1}^{p} \beta_{1i} \Delta \log(m_{t-i}) + \sum_{i=0}^{p} \beta_{2i} (i_{t-i}) + \beta_3 \log(m_{t-1}) + \beta_4 (i_{t-1}) + u_t \quad \ldots \quad (27)$$

We employ the ARDL two-step method of Bahmani-Oskooee and Bohal (2000) and find the maximum lag length (p), the order of UECM and check the existence of the long-run relationship. The null hypothesis of no cointegration implies that coefficients of lagged level variables β_3 and β_4 are simultaneously zero. The ARDL approach of Pesaran and Shin (1998) can be applied by the OLS method and the test is based on comparing the F-value (joint significance of lagged levels of variables) of the model with the critical bounds values given in Pesaran, *et al.* (2001). It reports the two asymptotic critical bounds values under two conditions (i) lower bounds assuming all the regressors to be I(0) and (ii) upper bound taking all the regressors to be I(1). If the calculated F-statistics is less than the lower bound, it shows that there is no long-run relationship, if F-value falls between the lower and the upper bound, it means we enter the indecisive region, it is only when the F-value is greater than the upper bound that the cointegration relationship comes into play.

After identifying the existence of the long-run relationship and maximum lag length, we proceed to the second step and find the optimal lag length based on Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC),[9] and $\overline{R}^2$, and calculate the long-run coefficients of the model. Finally diagnostic tests are applied to check that the model passes the functional form stability, heteroscedasticity and the serial correlation tests.

[8]Long-run elasticity can be derived directly as $-(\beta_4/\beta_3)$.

[9]Computation of ARDL procedure in Microfit 4.0 selects the optimal lag on the basis of maximum values of AIC and SBC.

4. DATA DESCRIPTION

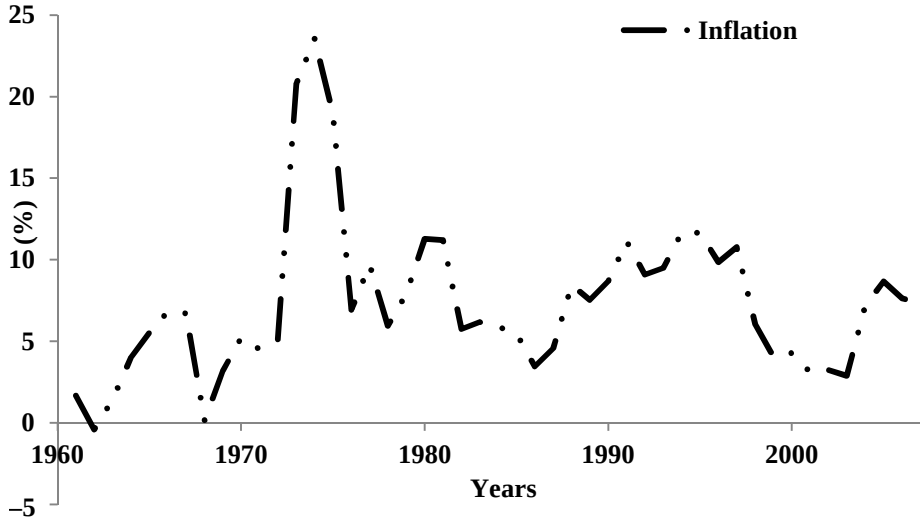
We use annual data for different monetary aggregates. The sample covers the period from 1960 to 2007. We use income measured by gross domestic product (GDP) as a scale variable in our empirical investigation. Monetary aggregates that we use in this paper are M1, monetary base, currency, and demand deposits. Both GDP and monetary assets are deflated by the consumer price index (CPI) to get real balances to real income ratio.

For single monetary aggregates and currency, we use the nominal interest rate (call money rate) as a proxy for the opportunity cost. For the demand deposit model, the long-term interest rate, the relevant opportunity cost variable is defined as the difference between interest rate offered on other assets (long-term assets) minus own rate of return (the rate of return on current and other deposits).

Data on deposit rates excluding current and other deposits are compiled by the SBP since 1990. Using the State Bank's definition, we have calculated it for the period 1960 to 1990 as weighted average of the interest rates on the individual longer-term components of time deposits, with the weights being the quantity shares of these deposits. The calculation of the welfare cost of inflation requires the information of the average reserve ratio for the entire sample period. The Reserve Ratio is measured as the reserves taken as ratio to deposits.[10]

Data on nominal GDP, monetary stocks, consumer price index (CPI) and call money rates are obtained from the International Financial Statistics (IFS) database. The data for rate of return on long-term maturity deposits, however, are taken from State Bank of Pakistan Annual Reports. Figure 1 plots the percentage change in price levels (CPI).

Fig 1.Trend in Inflation Rate, 1961-2007



[10]Following Agenor and Montiel (1996) reserve ratio is measured as (Reserve Money – Currency)/(M1 + Quasi Money – Currency).

5. ESTIMATION RESULTS

5.1. Testing for Unit Root

We begin our examination by checking the stationarity of the data using the Augmented Dickey Fuller (ADF) unit root test. To select the appropriate lag order for the ADF equations, we started with zero lag and continued adding lags until the Breusch Godfrey LM test, applied to the residual of the ADF regression, showed no serial correlation. Whether the ADF regression has an intercept only or an intercept along with trend, the ADF general-to-specific method was used as suggested in Enders (2004). Starting with the general form which includes both the constant and deterministic trend, the significance of the trend coefficient based on the t-test is checked. If it is significant and the hypothesis of unit root is not rejected, we conclude that the test includes the constant and the trend.

Table 1 presents the results of the ADF test. The coefficient on liner-time trend term appears statistically significant for only the log (demand deposits/GDP) variable. The estimates provide strong evidence that all the variables are non-stationary in their level, while their first differences are stationary, meaning all the series are I(1). As none of the series is integrated of the order greater than one, we can apply ARDL bounds test for cointegration.

Table 1

Unit Root Test Results

	Levels			First Differences		
Variable	Lags	Model	τ – value	Lags	Model	τ- value
Log(M1/GDP)	1	constant	–2.6890	0	constant	–5.9508**
Log(Mo/GDP)	0	constant	–2.4537	0	constant	–6.7867**
Log (Currency/GDP)	2	constant	–2.0391	0	constant	–5.4555**
Log (Demand Deposits/GDP)	0	Const & Trend	–2.6438	0	Const & Trend	–7.1718**
Interest Rate	0	constant	–2.4830	0	constant	–6.7077**
Log (Interest Rate)	0	constant	–2.6760	1	constant	–5.7319**
Deposit Rate	0	constant	–1.7544	0	constant	–7.5469**
Log (Deposit Rate)	1	constant	–2.3256	0	constant	–5.3193**

Notes: ADF regression equation: $\Delta y_t = \alpha_0 + \gamma y_{t-1} + \alpha_2 t + \sum_{i=1}^{p} \beta_i \Delta y_{t-1} + u_t$

The null and alternative hypotheses for the ADF test apply on the coefficient of the first lag of dependent variable γ. Under null hypothesis $\gamma = 0$ or the series is non-stationary and under alternative hypothesis of stationarity, $\gamma < 0$. γ has non-standard distribution so τ-value is compared to McKinnon (1991) critical values. Critical values at 5 percent level of significance are –2.9266 and –3.51074 for the constant only and constant and trend models, respectively. ** Indicates that the series are stationary at the 1 percent level of significance.

5.2. Estimation of Money Demand Function and Calculation of Welfare Cost of Inflation for Monetary Base

5.2.1. *Estimating Demand Function for Monetary Base*

As earlier mentioned, we apply the two-step ARDL approach. Specifically, in the first step, we test the existence of the long-run relationship, using the bounds test. After confirmation of the presence of the long-run relationship, the ARDL framework proposed

by Pesaran and Shin (1999) is used to estimate the long-run estimates of the underlying variables. We estimate two different specifications of money demand function, namely semi-log and double log demand function, based on the monetary base.[11]

The F-statistics to test for the existence of cointegration are sensitive to the order of lag in the model, therefore the ARDL (1, 0) is selected based on the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC) for both semi- and double-log money demand functions with money taken to be the monetary base. Besides, several tests are applied to the selected model to confirm the volatility of the estimated model. The results are presented in Table 2.

The estimated F-statistics given in Panel A of the table provide evidence of the presence of long-run association between the variables. Specifically, as we can see from the table, the value of F-statistic is greater than the upper critical bounds, indicating the rejection of the null hypothesis of no cointegration. This implies that the variables included in the model have a stable long-run equilibrium relationship. This holds for both semi- and double-log models.

Table 2

ARDL Results for Monetary Base

No. of Optimal Lags	Semi-log Demand Function	Double-log Demand Function
Panel A: F-statistics for Testing the Existence of Long-run Relationship		
1	55.744***	53.920***
Panel B: Long-run Coefficients		
Regressor	Coefficient	Coefficient
Constant	–1.366***	–2.665***
Interest rate	–0.054***	–0.331***
$\overline{R}^2$	0.786	0.779
DW–statistic	1.990	1.949
F-statistic	85.263***	82.218***
Panel C: Diagnostic Tests		
$\chi^2_{SC(1)}$	0.002[0.960]	0.017[0.894]
$\chi^2_{FF(1)}$	1.343[0.246]	1.102[0.294]
$\chi^2_{N(2)}$	25.125[0.000]	0.159[0.690]
$\chi^2_{Het(1)}$	0.240[0.624]	22.717[0.000]
CUSUM	0.323[0.742]	0.135[0.412]
CUSUMSQ	0.216[0.865]	0.223[0.534]

Notes: Asymptotic critical bounds values are obtained from Pesaran, *et al.* (2001) Table F in Appendix C, Case III: unrestricted intercept and no trend for k=1, at 1 percent level of significance lower bound = 6.84 and upper bound = 7.84, at 5 percent level of significance lower bound = 4.94 and upper bound = 5.73.

The Lagrange Multiplier statistics $\chi^2_{SC(1)}$,$\chi^2_{FF(1)}$, $\chi^2_{Het(1)}$, and $\chi^2_{N(2)}$ with degrees of freedom in parentheses are the tests for serial correlation, functional form mis-specification, Heteroscedasticity, and Normality, respectively. CUSUM and CUSUMSQ are the tests for testing the null hypothesis of no structure break, i.e., the estimated coefficients are the same in every period.

[11]As unit root test showed that monetary base and interest rate series had drift only so the ARDL equation does not include trend term.

The long-run estimates of the models are given in Panel B of Table 2. Both the parameters of the model are significant regardless of whether the model is estimated in semi-log or double-log form. The interest rate semi-elasticity of monetary base (α1) shows that a 1 percent increase in nominal interest rate lowers the demand for monetary base by 5.4 percent. The value of adjusted R^2 (0.79) shows that the ARDL specification (1, 0) is a quite good fit.

The long-run estimates from the double log demand function have expected signs and are statistically significant. The interest rate elasticity of the demand for monetary base is 0.33, almost the same to those (0.34) estimated in Hussain, *et al.* (2006). The value of adjusted R^2 is 0.77 which shows the goodness of the fit of the model. The results of diagnostic tests reported in Panel C of the table provide evidence that both of the models are well specified and free from the specification errors. Specifically, diagnostic tests indicate that there is no problem of serial correlation, heteroscedasticity and functional form mis-specification in the selected models. The CUSUM and CUSUMSQ test results provide evidence that there is no structure break in the estimated coefficients.

5.2.2. *Calculating Welfare Cost of Inflation for Monetary Base*

In this subsection we calculate the welfare cost of inflation using the Lucas compensating variation measure and the consumer's surplus measure for both semi-log and double-log models. The results are presented in Table 3. The welfare cost is measured both as moving from Friedman's optimal inflation rate to some positive inflation rate (from zero nominal interest rate to a positive interest rate) and moving from zero inflation (stable price) to a positive inflation rate. The real interest rate is approximately 2 percent for 2007, therefore, i = 0.02 is the benchmark value of nominal interest rate under zero inflation.[12] When i = 0.08 it means the inflation rate is 6 percent, and for i = 0.10 the inflation rate is 8 percent.

Table 3 shows the welfare cost as percent of GDP associated with increasing interest rate from zero to a positive rate. The welfare cost entry against each interest rate is the loss in welfare for deviating from the Friedman's Deflation rule.

The second column of the table shows the welfare cost using the compensating variation approach. The welfare cost of 5 percent nominal interest (3 percent inflation) is 0.15 percent of GDP against zero inflation, while comparing with zero nominal interest rate (optimal deflation rule) the cost is approximately 0.18 percent of GDP. Keeping in view the end of sample period inflation rate of 7 percent (i = 0.09) the welfare gain of moving towards zero inflation (i = 0.02) is 0.55 percent of GDP (the difference between the welfare costs at 9 percent and 2 percent nominal interest, 0.583 and 0.028 respectively) and further moving to the deflation rate results in an additional gain of 0.028 percent of GDP.

The welfare cost based on the consumer's surplus approach is given in column 3 of Table 3. The welfare cost of 5 percent nominal interest rate is 0.12 percent of GDP against price stability and slightly higher at 0.14 percent of GDP when compared to zero nominal interest rate. Similarly the welfare cost of 9 percent inflation is 0.41 percent of against the deflation rate, which is less than the 0.58 percent of GDP calculated under the Lucas (2000) approach form. We find that for all the nominal interest rates, the welfare cost is higher under the compensating approach than under Bailey's approach.

[12]Following Gillman (1993) $i = 0.093$ and $\pi = 0.0721$ giving the value of r approximately equal to 0.02.

Table 3

The Welfare Cost of Inflation for Monetary Base

	Semi-log Model		Double-log Model	
Interest Rate	Compensation Variation Approach	Consumer's Surplus Approach	Compensation Variation Approach	Consumer's Surplus Approach
0.00	0.000	0.000	0.000	0.000
0.01	0.007	0.006	0.159	0.159
0.02	0.028	0.026	0.254	0.253
0.03	0.064	0.056	0.333	0.332
0.04	0.115	0.097	0.404	0.402
0.05	0.180	0.146	0.470	0.467
0.06	0.259	0.203	0.531	0.527
0.07	0.353	0.266	0.590	0.584
0.08	0.461	0.336	0.645	0.639
0.09	0.583	0.411	0.699	0.691
0.10	0.720	0.490	0.750	0.742
0.20	2.882	1.395	1.200	1.179
0.30	6.484	2.276	1.583	1.546
0.40	11.528	2.991	1.928	1.874
0.50	18.012	3.523	2.249	2.175
0.60	25.938	3.899	2.552	2.457
0.70	35.304	4.156	2.841	2.724
0.80	46.112	4.327	3.118	2.978
0.90	58.360	4.439	3.387	3.222
1.00	72.050	4.511	3.648	3.457

For Semi-log Model

Compensation variation approach: $w(i) = 0.7205i^2$

Consumer's surplus approach: $WC = \frac{e^{-1.3668}}{5.4999}\left[1 - e^{-5.4999\ i}(1 + 5.499\ i)\right]$

For Double log Model

Compensation variation approach: $w(i) = \left[1 - 0.0696 i_t^{0.66814_1}\right]^{-0.4967} - 1$

Consumer's surplus approach: $WC = 0.4967\ e^{-2.665}\ i^{0.66814}$

The costs under the two approaches are comparable for the single digit nominal interest rate and the difference widens for the higher interest rates. Deviating from Friedman's Deflation rule, the cost of 20 percent nominal interest rate is 2.8 percent of income under Lucas' approach, while for Bailey's approach the cost is 1.4 percent. The difference between the calculated welfare losses from the two approaches is due to the quadratic nature of the compensating variation formula, in which the nominal interest rate appears in the quadratic form.

For the log-log money demand function, the estimated welfare costs are given in the last two columns of Table 3. The welfare cost of 5 percent nominal interest rate is 0.47 percent of real income. The welfare cost of 5 percent inflation against the benchmark of zero inflation is 0.21 percent of income. The cost of 9 percent nominal

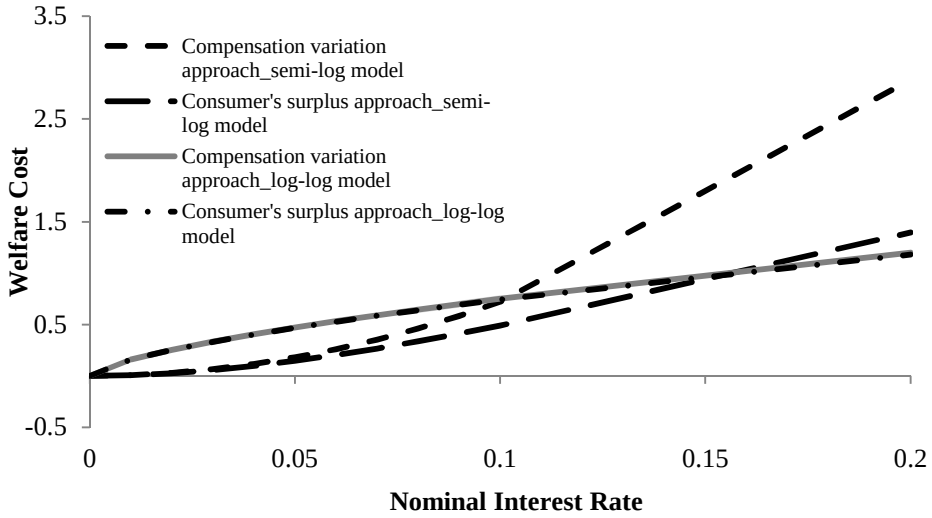
interest rate, the call money rate at the end of sample period, costs about 0.7 percent of real output. Reducing the nominal interest rate from 9 to 2 percent (under zero inflation) yields welfare gain equivalent to an increase in income by 0.44 percent.

Similar to the case of semi-log money demand function, the welfare costs estimated, based on consumer's surplus approach, are lower than the welfare costs estimated using the compensation variation approach. However, for the log-log money demand model, the difference is minor.

Comparing the estimated welfare costs across both specifications of demand for money, we find that the welfare cost of inflation for moderate inflation under semi-log money demand function is relatively small compared to that under the log-log model. Moving from zero inflation to the deflation rule results in welfare gain of only 0.02 percent of GDP in semi-log model compared to a substantial gain of 0.25 percent of GDP for the double log model.[13]

The welfare losses (relative to deflation rule) at different nominal interest rates are plotted in Figure 2. The nominal interest rate up to 20 percent is taken on the horizontal axis. The two approaches give almost the same welfare loss calculations for low inflation/interest rates but they tend to diverge for higher interest rates.

Fig 2. The Welfare Cost of Inflation for Monetary Base



5.3. Estimation of Money Demand Function and Calculation of Welfare Cost of Inflation for M1

5.3.1. *Estimating Demand Function for M1*

Table 4 presents the ARDL results for M1. Similar to the case of monetary base, two specification of demand for money, namely semi-log model and log-log model, are

[13]Wolman (1997) and Ireland (2007) show that towards low interest rate the semi-log model shows satiation in money holding but for the double log model the money holdings take asymptotic trend as nominal interest rate approaches zero.

Table 4

ARDL Results for M1

No. of Optimal Lags	Semi-log Demand Function	Double-log Demand Function
Panel A: F-statistics for Testing the Existence of Long-run Relationship		
3	24.018***	19.311***
Panel B: Long-run Coefficients		
Regressor	Coefficient	Coefficient
Constant	–1.013***	–0.844***
Interest rate	–0.031***	–0.208***
$\bar{R}^2$	0.785	0.744
DW-statistic	2.011	2.019
F-statistic	24.018***	19.311***
Panel C: Diagnostic Tests		
$\chi^2_{SC(1)}$	0.027[0.869]	0.081[0.776]
$\chi^2_{FF(1)}$	0.049[0.823]	4.598[0.032]
$\chi^2_{N(2)}$	1.090[0.296]	0.245[0.884]
$\chi^2_{Het(1)}$	0.008[0.996]	1.122[0.289]
CUSUM	0.334[0.564]	0.310[0.537]
CUSUMSQ	0.534[0.634]	0.213[0.876]

Notes: Asymptotic critical value bounds are obtained from Pesaran, *et al*. (2001) Table F in Appendix C, Case III: unrestricted intercept and no trend for k=1, at 1 percent level of significance lower bound = 6.84 and upper bound = 7.84, at 5 percent level of significance lower bound = 4.94 and upper bound = 5.73.

The Lagrange Multiplier statistics $\chi^2_{SC(1)}$,$\chi^2_{FF(1)}$, $\chi^2_{Het(1)}$, and $\chi^2_{N(2)}$with degrees of freedom in parentheses are the tests for serial correlation, functional form mis-specification, Heteroscedasticity, and Normality, respectively.

CUSUM and CUSUMSQ are the tests for testing the null hypothesis of no structure break, i.e., the estimated coefficients are the same in every period.

estimated. The estimated F-statistic indicates that there is a level relationship (cointegration) between the variables for both semi- and log-log models. The long-run coefficients of money demand function given in Panel B of Table 4 have theoretically correct signs and are statistically significant. The interest rate semi-elasticity of M1/GDP ratio is –3.172, the interest rate elasticity of money demand from log-log model is –0.208. Both models generally satisfy all diagnostic tests.

5.3.2. *Calculating Welfare Cost of Inflation for M1*

The estimated welfare costs of inflation for both semi-log and log-log models of M1 are presented in Table 5. Specifically, column 2 of the table gives the value of welfare loss against different nominal interest rates based on the compensating variation approach. The welfare loss of 3 percent inflation corresponding to 5 percent nominal rate of interest is 0.21 percent of GDP against zero interest rate, while it reduces to 0.17 percent against price stability. The welfare loss associated with the inflation rate of 7 percent is 0.64 percent of income compared to a zero inflation rate, while reducing inflation further to deflation rate results in additional gain of 0.03 percent of GDP or total gain of 0.67 percent of GDP. It should be noted that the welfare cost of inflation associated with higher interest rates/inflation rates is substantially high than the welfare cost at lower inflation rates. It should also be noted that the welfare cost of inflation based on the compensation variation approach is higher than the welfare cost of inflation based on the consumer's surplus approach through the range of interest rates used in the estimation. However, the difference is more profound at higher interest rates.

Table 5

The Welfare Cost of Inflation for M1

	Semi-log Model		Double-log Model	
Interest Rate	Compensation Variation Approach	Consumer's Surplus Approach	Compensation Variation Approach	Consumer's Surplus Approach
0.00	0.000	0.000	0.000	0.000
0.01	0.008	0.005	0.113	0.113
0.02	0.033	0.022	0.197	0.196
0.03	0.074	0.048	0.272	0.270
0.04	0.133	0.084	0.342	0.339
0.05	0.208	0.129	0.409	0.405
0.06	0.299	0.182	0.473	0.468
0.07	0.408	0.243	0.536	0.529
0.08	0.532	0.311	0.596	0.588
0.09	0.674	0.386	0.656	0.645
0.10	0.832	0.467	0.714	0.701
0.20	3.330	1.526	1.251	1.214
0.30	7.493	2.820	1.744	1.673
0.40	13.326	4.144	2.214	2.101
0.50	20.810	5.386	2.669	2.506
0.60	29.976	6.492	3.115	2.895
0.70	40.794	7.444	3.555	3.271
0.80	53.284	8.245	3.990	3.635
0.90	67.446	8.906	4.423	3.990
1.00	83.260	9.445	4.854	4.337

For Semi-log Model

Compensation variation approach: $w(i) = 0.8326i^2$

Consumer's surplus approach: $WC = 0.1145\left[1 - e^{3.1718}(1 + 3.1718i)\right]$

For Double log Model

Compensation variation approach: $w(i) = \left[1 - 0.1643i_t^{0.7911_1}\right]^{-0.2641} - 1$

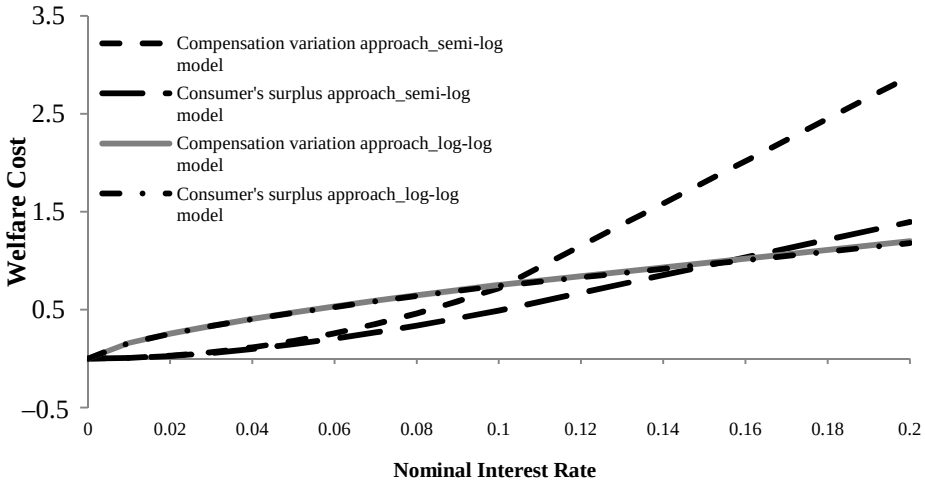
Consumer's surplus approach: $WC = 0.2640e^{-1.8060}i^{0.7911}$

Specifically, we observe that the welfare loss as a proportion of GDP based on the consumer's surplus approach rises from 0.02 percent when the rate of interest is 2 percent (inflation rate is zero) to over 0.38 percent at a rate of interest of 9 percent. The difference between these two welfare costs (0.38-0.02 = 0.36) gives the welfare loss of 7 percent inflation rate against zero inflation. The welfare cost of 3 percent inflation is 0.13 percent of income and moving to zero interest rate yields welfare gain of 0.02 percent of GDP.

By comparing the welfare cost of inflation under both semi-log and log-log models for M1, we find that welfare cost from semi long money demand function gives higher cost for higher interest. This holds regardless of whether the welfare cost is estimated by using the compensation variation approach or the consumer's surplus approach. Further, the estimated welfare cost based on the double log money demand indicates that both the approaches give almost the same measure of welfare loss by deviating from the deflation rule. The welfare gain of moving from higher to lower nominal interest rate is almost the

same for the log-log model but for the semi-log model the welfare gain is associated with the rate of interest. Under the semi-log model, a 1 percent decrease in nominal interest rate, for higher interest rate, results in more benefit compared to one percent decrease in nominal interest rate at the lower end of the curve. The welfare costs are plotted in Figure 3.

Fig. 3. The Welfare Cost of Inflation for M1



As in Wolman (1997) we are interested in the apportionment of the total gain of moving form a positive interest rate to the deflation rate. This gain has two parts; the first gain comes in moving from a positive nominal interest rate to price stability and the second from moving from zero inflation to the deflation policy. Owing to the sensitivity of the demand curves to low interest rates we find that, for the semi-log model, larger benefit accrues as the economy moves towards zero inflation; but further moving to deflation rate has a very small gain. Figure 2 shows that for semi-log money demand function under consumer surplus, the welfare gain of moving from 12 percent interest rate to deflation rate is equal to 0.64 percent of GDP, while for the double log the gain is 0.81 percent of the income. The proportion of gain from moving from zero inflation to deflation is only 5.15 percent of the total gain for the semi-log model and, for the double log, it is 24.2 percent.

The difference between the estimates of welfare loss is reduced when the cost is measured relative to zero inflation nominal interest rate. For the present study the end of period real interest rate is 2 percent which, under price stability, is equivalent to nominal interest rate. As shown in Figure 3 the welfare cost of non-optimal policy with a positive inflation rate has the same welfare loss under the three cases; the semi-log model with compensating variation and traditional approaches and the double-log model with the consumer surplus approach.[14] The gain of moving from 12 percent interest rate to stable prices ranges from 0.61 to 0.63 percent of the income. For both the money demand specifications for M1, the welfare loss is almost the same for low and moderate inflation rates. The welfare loss line drawn for the double log model under the compensating variation approach diverges from the rest of the three cases as interest rate rises above 10 percent.

[14]Lucas (2000) showed that the welfare gain of moving towards price stability is same for both the log-log and semi-log versions.

5.4. Estimation of Demand Function and Calculation of Welfare Cost of Inflation for Currency-Deposit Model

5.4.1. *Estimating Demand Function for Currency-Deposit Model*

After estimating the demand function and the welfare costs for the single money stocks, M0 and M1 we estimate the welfare loss for the Currency-Deposit Model. We disintegrate the two components of M1 for the reason that both currency and demand deposits do not have the same opportunity cost. Hand-to-hand used currency offers no return; its opportunity cost is the yield on other financial assets, while the banking system offers interest rate on the demand deposits, the opportunity cost of holding demand deposits is the difference between the yield on alternative assets and the return on deposits. This difference requires that both currency and demand deposit functions should be estimated separately with their own opportunity costs. This also requires some modification in the welfare cost formulae. We apply the ARDL approach on bivariate models separately for currency and demand deposits using both semi-log and log-log specifications. The optimal lag selected based on the AIC and SBC is one for all the four models. The results are given in Table 6.

Table 6

ARDL Results for Currency-deposit Model

	Semi-log Demand Function		Double log Demand Function	
No. of Optimal Lags	Currency	Demand Deposit	Currency	Demand Deposit
Panel A: F-statistics for Testing the Existence of Long-run Relationship				
1	149.347***	24.793***	53.921***	23.629***
Panel B: Long-run Coefficients				
Regressor	Coefficient	Coefficient	Coefficient	Coefficient
Constant	–1.576***	–2.083***	–1.340***	–2.088***
Interest rate	–0.063***	–0.045**	–0.037**	–0.151*
Trend		0.016***		0.015***
$\overline{R}^2$	0.906	0.674	0.903	0.663
DW-statistic	1.640	1.871	1.549	1.737
F-statistic	149.347***	24.793***	144.860***	23.629***
Panel C: Diagnostic Tests				
$\chi^2_{SC(1)}$	1.563[0.211]	0.051[0.821]	2.477[0.116]	1.001[0.317]
$\chi^2_{FF(1)}$	0.343[0.558]	0.431[0.511]	0.206[0.649]	0.754[0.385]
$\chi^2_{N(2)}$	3.893[0.143]	0.311[0.856]	5.695[0.058]	0.217[0.897]
$\chi^2_{Het(1)}$	0.262[0.608]	0.647[0.421]	0.069[0.791]	0.553[0.457]
CUSUM	0.390[0.569]	0.324[0.613]	0.276[0.893]	0.253[0.756]
CUSUMSQ	0.232[0.834]	0.278[0.819]	0.347[0.759]	0.263[0.659]

Notes: Asymptotic critical value bounds are obtained from Pesaran, *et al*. (2001) Table F in Appendix C, Case III: unrestricted intercept and no trend for k=1, at 1 percent level of significance lower bound = 6.84 and upper bound = 7.84, at 5 percent level of significance lower bound = 4.94 and upper bound = 5.73.
Case V: intercept and trend for k=1, at 1 percent level of significance lower bound = 8.74 and upper bound = 9.63, at 5 percent level of significance lower bound = 6.56 and upper bound = 7.30.
The Lagrange Multiplier statistics $\chi^2_{SC(1)}$,$\chi^2_{FF(1)}$, $\chi^2_{Het(1)}$, and $\chi^2_{N(2)}$ with degrees of freedom in parentheses are test for serial correlation, functional form mis-specification, Heteroscedasticity, and Normality, respectively.
CUSUM and CUSUMSQ are the tests for testing the null hypothesis of no structure break, i.e., the estimated coefficients are the same in every period.

The results indicate the existence of long-run relationship for both currency and demand deposits demand functions regardless of whether the model is estimated in semi-log or the log-log form. The long-run coefficients from all four models are reported in Panel B of the table. The lower panel of the table shows that the estimated models do not have a serial correlation, heteroscedasticity and that the regression passes the functional form mis-specification and the normality tests.

The semi-elasticity of currency-to-GDP ratio is –6.36 which is higher than for any other money stock. On the other hand, the corresponding figure with respect to deposit rate for demand deposits is –4.5. From the log-log specification, the interest rate elasticity is –0.037 and –0.151 for currency-to-GDP ratio and demand deposits, respectively.

5.4.2. *Calculating Welfare Cost of Inflation for Currency-Demand Model*

Using the estimates given in Table 6, we calculate the welfare costs of inflation for unrestricted and restricted models. The results are presented in Table 7. As one can see from column (2) of the table, the welfare gain of moving from 9 percent nominal interest

Table 7

The Welfare Cost of Inflation for Currency-demand Model

	Semi-log Model				Double log Model	
	Compensation Variation Approach		Consumer's Surplus Approach		Calibration	Consumer's Surplus Approach
Interest Rate	Restricted Model	Unrestricted Model	Restricted Model	Unrestricted Model	Double Log Model	Restricted Model
0.00	0.000	0.000	0.000	0.000	0.000	0.000
0.01	0.004	0.006	0.004	0.006	0.056	0.074
0.02	0.016	0.027	0.016	0.024	0.102	0.134
0.03	0.036	0.060	0.035	0.052	0.143	0.188
0.04	0.065	0.108	0.061	0.089	0.183	0.240
0.05	0.102	0.168	0.093	0.134	0.221	0.290
0.06	0.147	0.243	0.130	0.185	0.258	0.338
0.07	0.200	0.331	0.172	0.242	0.295	0.385
0.08	0.261	0.432	0.218	0.304	0.330	0.431
0.09	0.331	0.547	0.268	0.370	0.365	0.475
0.10	0.408	0.675	0.322	0.439	0.399	0.520
0.20	1.634	2.702	0.973	1.196	0.724	0.932
0.30	3.677	6.079	1.677	1.881	1.029	1.311
0.40	6.537	10.808	2.315	2.403	1.324	1.670
0.50	10.215	16.887	2.848	2.772	1.612	2.016
0.60	14.709	24.318	3.274	3.027	1.897	2.350
0.70	20.021	33.099	3.607	3.203	2.180	2.676
0.80	26.150	43.232	3.865	3.329	2.461	2.995
0.90	33.096	54.715	4.066	3.424	2.742	3.307
1.00	40.860	67.550	4.225	3.501	3.023	3.614

For Semi-log Model

Compensation variation approach
Restricted model: $w(i) = 0.4086i^2$
Unrestricted model: $w(i) = 0.6755i^2$
Consumer's surplus approach:
Restricted model: $WC = 0.04184\left[1-e^{-4.52i}(1+4.52i)\right]+0.0274\left[1-e^{-0.5537i}(1+0.5537i)\right]$
Unrestricted model: $WC = 0.0325\left[1-e^{-6.36i}(1+6.36i)\right]+0.0274\left[1-e^{-0.5537i}(1+0.5537i)\right]$

For Double-log Model

Calibration: $w(i)=\left[1-(0.15432)i_t^{0.84913}\right]^{-0.1777}-1$

Consumer's surplus approach: $WC = 0.03614i^{0.84193}$

rate to zero inflation (2 percent nominal interest rate) is 0.48 percent of GDP and further moving to deflation rate results in additional gain of 0.18 percent of GDP. Based on Bailey's approach, a 10 percent inflation costs the equivalent of a reduction of output by 0.38 percent. Under the log-log currency-deposit model, the gain in moving from price stability to Friedman's optimal rule of deflation is 0.13 percent of GDP. The welfare estimates based on both the consumers' surplus and the compensating variation approach tend to give similar costs of inflation.

After estimating the money demand functions and calculating the welfare cost for the three models we draw the following conclusions regarding the welfare cost and its sensitivity to the selection of money demand function, approaches to calculate welfare loss and the definition of money.

(i) By comparing the two approaches to measure the welfare loss we find that across all monetary assets under semi-log model, Lucas' quadratic formula gives bigger values of the loss function for higher interest rates. On the other hand, for double log model, the two approaches give approximately the same loss in welfare.

(ii) The welfare cost of inflation is sensitive to the money demand specification. For all the monetary aggregates the welfare gain of moving from price stability to zero interest rate under double log model ranges from 0.10 percent to 0.25 percent of GDP, while for semi-log model the gain is trivial and ranges from 0.01 percent to 0.03 percent of GDP.

(iii) The Bailey and Lucas welfare cost formulae are based on the elasticity and semi-elasticity of money demand function. The long-run estimates of both the semi log and double log models show that for all the four money stocks the elasticities and semi-elasticities are different.

(iv) Comparing M1 and the Currency-Deposit model which calculates welfare loss based on different opportunity costs of the constituents of M1, we find that the welfare cost for currency-deposit model is less than the loss measured using M1. These findings are in line with the empirical literature on welfare cost, that, as currency and deposits are lumped together in M1 and the cost evaluated at the same market rate of interest for both currency and demand deposits (treating deposits as non-interest bearing asset), it exaggerates the true cost.[15]

(v) The welfare cost of inflation is sizable for Pakistan in comparison to the developed countries. The welfare gain of moving from 14 percent to 3 percent nominal interest rate is 0.65 percent of GDP, which is greater than the estimated gains for the US, Canada and the European countries (for double log specification using the Lucas compensating variation approach).[16] Similarly the cost computed from semi-log model and using the consumer surplus approach yields welfare loss of 0.06 percent and 0.62 percent of GDP as moving from 2 percent and 10 percent inflation rates to

[15]Distinct role of currency and deposits is emphasised in Marty (1999), Bali (2000), and Simonsen and Rubens (2001).

[16]See Serletis and Yavari (2003, 2005, 2007).

price stability. This cost is greater than computed for the US which ranges from 0.04 to 0.21 percent of income under similar settings.[17]

6. CONCLUSIONS

In this study we quantified the welfare cost of inflation from the estimated long-run money demand functions for Pakistan for the period 1960-2007. The demand functions for four monetary aggregates—monetary base, narrow money (M1), currency and demand deposits—taken as a ratio to income against their respective opportunity costs, are estimated. The welfare cost of inflation calculated for constant interest elasticity specification is compared to the constant semi-elasticity specification for two types of monetary asset models. For the single monetary asset model, money stock is defined as monetary base and narrow money M1, while in the currency-deposit model M1 is disintegrated into currency and deposits based on the return on each of its constituent components. In calculating the welfare loss we have employed the traditional approach proposed by Bailey (1956) where loss due to inflation is measured by area under the money demand curve and the Lucas (2000) compensating variation approach.

The empirical results show that all the monetary aggregates are negatively related to the interest rate. The welfare gain of moving from positive inflation to zero inflation is approximately the same under both money demand specifications, but the behaviour of the two models is different towards low interest rates. Moving from zero inflation to zero nominal interest rate has substantial gain under the log-log form compared to the semi-log function. The compensating variation approach for the semi-log model gives higher welfare loss figures compared to Bailey's approach due to the quadratic nature of nominal interest rate in the Lucas (2000) welfare measure. However, the two approaches yield approximately similar welfare costs of inflation for the log-log specification.

The findings of this study suggest that the society bears a substantial loss due to inflation and a positive nominal interest rate. This is the first attempt to break new grounds for measuring the welfare cost of inflation for Pakistan. However, the limitation of this study is that the welfare cost analysis is based on the direct cost of inflation, not addressing other channels through which inflation results in inefficient allocation of resources. The direct cost of inflation understates the actual cost of inflation, as inflation tends to distort marginal decisions by altering the work-leisure choice and interact with the tax structure of the economy. The actual cost of inflation is much greater than estimated in this study. The State Bank of Pakistan should opt for an independent monetary policy. For the last two years the government has financed its expenditures by borrowing heavily from the SBP against the bank's tight monetary policy and passed on the rising inflation to the economy. Furthermore, the Taylor Principle-driven rising nominal interest rate contributes to inflation through the cost side. The best policy contribution to sustain growth and welfare will be to maintain price stability.

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Book Review

Aminullah Chaudary. *Political Administrators: The Story of Civil Service of Pakistan*. Oxford University Press, 2011. 371 pages, Rs 895.00.

A bureaucracy is a group of individuals who are non-elected and serve as government employees to help implement rules and laws of a country. The term bureaucracy was created by combining the words 'bureau' which means desk or office and 'kratos', meaning rule or political power to govern. Different countries have adopted various ways to induct people to run the government and make new laws. Max Weber, a renowned and notable German administrative scholar is credited to be the pioneer of the use of bureaucracy in public administration.

In this book on the Civil Service of Pakistan, the author has described the way bureaucratic culture gained strength and restricted the grooming of political culture in the country. He shows how 'seniority' overwhelmed 'merit' in the promotion process of the officers in the Civil Service of Pakistan (CSP), an offspring of the Indian Civil Service (ICS). The CSP officers always considered themselves as an élite class and looked down upon the politicians. The author narrates the superior attitude of Iskander Mirza (a notable member of the ICS, then CSP) in these words: "Mirza was proud of his IPS and CSP lineage and never missed an opportunity of proclaiming this fact. His admiration for the colonial system of administration was matched by a corresponding contempt for politicians." The relationship between the bureaucracy and the military was to ensure that politicians did not make a mess of things. The bureaucracy was able to call on the military in times of crisis and never worried about its overstaying the visit. The basic theme of the Indian Civil Service was that the local Indians were recruited as officers by the British to suppress and control an enslaved people. Unfortunately, even after gaining independence the mindset of the bureaucratic staff didn't change and they conveniently forgot that an independent nation required a different approach.

The first effort to recruit locals to govern was done by the Mughal Emperor Akbar to collect revenue. Once the East India Company started its expansion in India it realised the recruitment of locals was helpful in collecting revenue and implementing law. Though the entry to the ICS was opened through competition, the entry for Indians was a daunting task as they would have to travel to London to take the competitive tests. Many commissions were formed to find ways to enrol more locals in the system. A few years after World War I, the quota of locals in the ICS was increased to 33 percent. The first ICS examination in India was conducted in 1922 in Allahabad. At the time of

Independence, out of 1157 members of the ICS, only 101 were Muslims; among them Punjabis constituted the highest number at 27, followed by Bengalis at 18 and 16 from the United Provinces. Nepotism was prevalent in the selection of Civil Services even during the times of the British. Influential families were able to induct their sons in the ICS.

After Independence, the ICS was first called the PAS (Pakistan Administrative Service) and then CSP (Civil Service of Pakistan). Chaudhry Mohammad Ali, a former member of the Indian Audit and Accounts Service played an important role in setting up the CSP. It was nurtured under Ghulam Mohammad and it reached its apex under Iskander Mirza who was from the Indian Political Service. The CSP wobbled a little under the Martial Law of General Ayub Khan but it soon regrouped itself to become stronger than before. Since Independence, Pakistan has set up more than thirty committees to propose recommendations and reforms in the Civil Services. Most of the times the reforms have been inspired and used to sort out old grudges and have resulted in sorting out individuals rather than the system. This happens every time when a new government assumes power and carries out a series of dismissals, removals and transfers to give a message that it means business. Funded by the Ford Foundation, Rowland Eggers submitted a report in 1953 that made a few recommendations to restructure the civil service in Pakistan. It suggested that there should be a properly coordinated central secretariat headed by a cabinet secretary. The line departments headed by technocrats should be treated at par with the generalist secretariat officers. He wanted the authorities to strike a careful balance between 'centralisation' and 'delegation' and the most important suggestion was that all cadres of services should be unified. Justice A.R. Cornelius headed two separate commissions, first in 1959 and then in 1969. Both recommended basic changes in the bureaucracy but were met with stiff resistance by the cabinet secretary Aziz Ahmad. Zulfiqar Ali Bhutto launched a campaign to make revolutionary changes in the bureaucracy under Vaqar Ahmed and Hasan Habib. The Administrative Reforms of 1973 led to three important consequences: The CSP was immediately dismantled by Bhutto. The CSP cadre was divided into three groups, namely the Secretariat Group (SG), the District Management Group (DMG) and the Tribal Areas Group (TAG). The members of the CSP were barred from keeping the former designations. General Zia-ul-Haq after assuming power through a military coup appointed a Civil Service Reforms Commission under the chairmanship of Justice Sheikh Anwarul Haq. Though the commission made a wide variety of proposals, but General Zia implemented only those that were politically advantageous to his rule. He discouraged the lateral entry of civilians into the bureaucracy and ordered a review of the appointments made under this system. The review board looked at 199 cases of recruitment in the Secretariat Group out of which 94 officers were retained in service, cases of 10 were sent to further review, 59 were reverted to their former posts and 36 were removed from service. The other important step taken was to merge the Tribal Areas Group into the District Management Group.

The governments of Nawaz Sharif and Benazir Bhutto didn't carry out any massive changes in the bureaucracy but made sure a number of transfers and dismissals were made to announce their power. General Pervez Musharraf seized power through coup d'état in 1999 and immediately set up a National Reconstruction Bureau (NRB)

under retired Lt.-Gen. Naqvi. Its basic purpose was to reconstruct all the institutions other than the Army which had **abrogated** the constitution four times. It abolished the Divisional system in Pakistan and the new tier of government saw the District at the top level. The plan was termed as 'people friendly' and announced that districts would be headed by Nazims, translated as Mayors. The intent was the same as Ayub Khan's Basic Democracy system to build a political base for the military regime. The office of the deputy commissioner was abolished and the district administration was supposed to be run by an elected Nazim, district and session judge, district police officer (DPO) and district coordination officer (DCO). The initial plan for this kind of set-up was to ensure the office of Nazim would not be party based. But as the events turned out, the 2005 local government elections were fought with clear violation of the rules, the Kings party of the President, Pakistan Muslim League (Q) securing most of the districts with their candidates as Nazims. In April 2006, a National Commission for Government Reforms (NCGR) was made under the leadership of Dr Ishrat Hussain, the outgoing Governor of State Bank of Pakistan. By the time the NCGR submitted its recommendations to President Musharraf, the latter was on his way out.

The concept of including the officers of the armed forces in the civil services has a long history. Before the Partition, both the ICS and the Military worked in a cohesive and complimentary manner and helped Britain consolidate her rule over India. The induction of the armed forces personnel in the civil services was used as a ploy to increase the influence of the military in the political affairs of the country. Last but not least the bureaucracy has been used to support the despotic rule and authoritarian decisions of military dictators which has often marred the fate of the nation and caused incalculable losses to the country.

The book gives a very comprehensive picture of the bureaucratic structure since the setting up of the East India Company up to the regime of General Pervaiz Musharraf. It is a good historic documentary and helps to provide the students and researchers useful background material for further exploration. A lot of good stuff has been written about the bureaucratic structure in Pakistan but this book has been authored by none other than a decorated civil officer himself who has served on very important positions in Pakistan. The major theme of the book is a critique of the bureaucratic structure and its romantic relationship with the military. The book provides an insight into how the grooming of political culture in Pakistan was obstructed by the civil service in collusion with dictators.

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Shorter Notices

Akhtar Hasan Khan. *The Impact of Privatisation in Pakistan*. Ferozsons (Pvt). Ltd. 2012. Paperback. 166 pages. Rs 395.00.

This book critical examines the practice and the process of privatisation in Pakistan which started by the early 90's and resurge in the first decade of twenty first century. The study was sponsored by the Pakistan Institute of Development Economics (PIDE). The book not only debates the international practice of privatisation but also discourses the basic theory of privatisation. The basic arguments given in favour of privatisation are the efficiency of private sector in allocation and utilisation of investment and resources, reduction of fiscal deficit, and enlarging of the stock market. However, most of the developed and developing countries which are economically performing well have achieved this without adopting privatisation as the major step in the public policy. The privatisation of some sectors and units like, financial institutions, KESC, PTCL, Steel Mill, and Oil and Gas Mills also bring into the debate very efficiently. The basic conditions for the success of the privatisation process have also been deliberated. The first and foremost condition is the transparency at every step from advertisement to the final payments in the process of privatisation. The other essential condition is the proper sequencing and the spread of privatisation over a long period instead of rushed and bunched privatisation. Equally, the selection of the sector to be privatised or not is also important. The success of privatisation is also dependent to other favourable conditions provision of which is the responsibility of the government. Privatisation for the sake of privatisation is critically debated and the book unfolds many shortcomings of the privatisation. As privatisation diverts investment from new technologically advanced ventures into buying public sector units, therefore this could be retarded for the economic growth. Similarly, the privatisation process is not foreign direct investment but permanent remittances of profits. Privatisation has also a negative impact on the employment as indicated by the past experiences of the privatisation in Pakistan. The argument of reduction of fiscal deficit can also be discarded as the privatisation leads to reduction in tax revenues and more tax evasion. On the same token, the belief that privatisation promotes more efficiency of units seems also vague in case of developing countries. The present government should be very cautious about privatisation keeping in view the past experience and should not privatise those sectors and enterprises which are considered as strategically important and deal with the provision of basic goods at subsidised rates. Rather the attention should be paid on the improvement of the management of these public sector units. Moreover, if the privatisation is indispensable then the best mode is through the sale of shares to general public. (*Ahmad Waqar Qasim*).

Sarah S. Aneel, Uzma T. Haroon, and Imrana Niazi (eds.). *Peace and Sustainable Development in South Asia—The Way Forward.* Sustainable Development Policy Institute and Sang-e-Meel Publications. 2012. Hard Cover. 305 pages. Rs 1200.00.

This book is a collection of papers presented at the Thirteenth Sustainable Development Conference hosted by the Sustainable Development Policy Institute, Islamabad in 2010, on the topic 'Peace and Sustainable Development in South Asia', and was attended by participants from Bangladesh, India, Nepal, and Pakistan. The book is divided in five sections: Peace and Conflict; Environment and Climate Change; Governance and Urbanisation; Water and Sanitation; and Food Security. Section 1. Peace and Conflict—delves on how the management of development, given diversity of people (religion, ethnicity, caste, gender), creates scenarios of social conflict. Section II. Environment and Climate Change—takes up important issues regarding financing for climate change, and how local communities can be empowered as a first line of defense to ward off impending climate disaster. Section III on Governance and Urbanisation deals with major issues of informal settlements as well as land grabbing by powerful élites and how political participation of the disempowered can be used to achieve a more equal and sustainable pattern of development. Section IV on Water and Sanitation draws upon the Bangladeshi experience, where a bottom-up approach has yielded significant cost benefits for achieving Millennium Development Goals for water and sanitation. This section also highlights how participatory techniques can be used to deal with storm waters through rain water harvesting and canal maintenance. Last, but not the least, the issue of food security for the socially backward communities in the Himalayan region is analysed, where access to resources is generally restricted to higher-class communities, and how equal access to these resources and help achieve food security for a large section of the society. The main message that comes out of this endeavour is that since local communities mostly bear the adverse impact of human activities on our environment, through climate change and related hazards, any mechanism to deal with it must seek their active involvement. (*Lubna Hasan*).