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Reforming the Posts: Abandoning the Monopoly-Supported Postal Universal Service Obligation in Developing Countries

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The monopoly-supported universal service obligation (USO) is usually defended on the grounds that the monopoly allows for cross-subsidy in letter services that in turn allows universal access to a service of great importance to all. This paper argues that letter delivery (as opposed to other services that may be provided by post offices) is not in universal demand in poor countries, that the size of the market in developing countries is such that USOs could not be met under the monopoly model, and that the monopoly carries heavy costs for sector development and consumer welfare. It proposes in the place of the postal USO a competitive approach involving universal access to a range of services that poor people have a need to access. Regarding reform of the incumbent, the paper takes a preliminary first cut at examining the statistical relationship between postal performance (as measured by letters per capita allowing for income per capita), trust in the postal service, and postal efficiency, and finds a significant link between the three. The results suggest that reforms that improve postal efficiency and trust in the postal network will improve the performance of the postal network. The paper suggests that there may be better uses of cross-subsidy from within the sector and government subsidy from without than supporting the inefficient delivery of a service rarely used by poor people.

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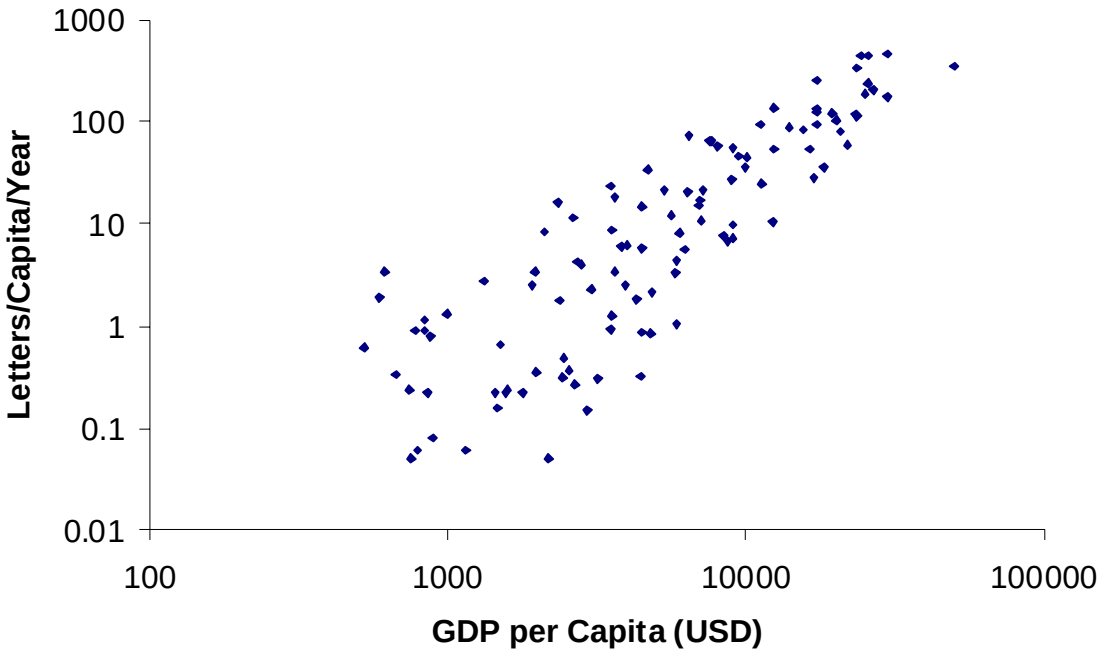
Introduction

According to UPU data, on average across countries, postal employees account for approximately 0.2 percent of the labor force. The global operating income of post offices is $240 billion, accounting on average for 0.4 percent of GDP. Development of postal services and broader development have traditionally gone hand in hand. A "postal Jipp curve" can be constructed linking letters posted per capita with GDP per capita (data from UPU postal database and World Bank World Development Indicators).[2] About 73 percent of the variation in the number of letters per capita can be predicted by GDP per capita (Figure 1). This suggests that there is a significant relationship between economic development and expansion of postal networks.

Figure 1.



A belief in the economic and social importance of the sector has been one factor behind pushing for universal access to postal services. The European Union (EU) defines universal service to post in the following terms:

[2] Letters/capita is clearly not a directly equivalent measure of telephones per capita that the original Jipp curve concentrated on —it is more of a measure of use (equivalent, perhaps, to minutes of call time/capita) than of infrastructure rollout. Another measure might be post offices/capita. However, as post offices are public, whereas the great majority of telephones are private, this is not a good comparator, either. For example, Hong Kong could probably get away with very few really large post offices to serve the entire city, obviously it couldn't do the same with telephones. The most direct equivalent may be home letterboxes per capita, but that does not appear to be available in the UPU database.

> "Member States shall ensure… the permanent provision of a postal service of a specified quality at all points in their territory at affordable prices for all users… the universal service provider(s) guarantee(s) every working day… one delivery to the home or premises of every legal or natural person…[for] postal items up to two kilograms [and] postal packages up to 10 kilograms…"

Traditionally this USO has been linked with monopoly provision of services. The theory of the monopoly-provided USO can be summed up as follows. Mail delivery to the home is an important public service to which all should have access. For many low-volume or difficult-to-service users, however, the market price of mail services would be prohibitively high. In order to serve those customers while allowing for a financially sustainable postal network, a monopoly operator charges a single stamp rate for nationwide delivery, with "profits" made from the delivery of mail to high-volume areas and users (where the price of the stamp is higher than the cost of delivery) used to support "loss-making" delivery operations for low-volume areas and users (where pricing is below cost).

Many developing countries have adopted the monopoly USO model for their own postal systems. They do not tend to have USOs as stringent as the EU's, while in many cases, the obligation is rather imprecise or undefined. The obligation rarely involves home delivery, for example.[3] Nonetheless the general model holds in LDCs that a provider should ensure one-price letter delivery across its national territory, funding loss-making routes with the revenues that it is guaranteed from a monopoly over delivery on profitable routes.

The model has proven itself practicable (if not necessarily efficient) in many wealthy countries. However, its application in developing countries is likely to be inefficient, impractical, and inequitable.

Is a USO for Letter Delivery Needed in Developing Countries?

Regardless of efficiency in delivery, does everyone in the developing world need letter delivery in the same way as one might argue the need for primary education or health care? It is perhaps worth asking this question in the context of severe resource constraints that mean the goals of universal primary education or universal access to basic health care are far from being reached. More narrowly, similar language of universality is used in other infrastructure sectors including electricity. There (too) the language conflicts with the reality—in part because of inefficiencies and inequities of provision, but also because there are only so many resources, and a great many needs for those resources to meet.

Is there evidence that everyone in developing countries needs (or would use) letter delivery to a nearby post office every business day or every week? To begin to answer that question it is worth looking again at demand for postal services in poor countries.

[3] Even within the EU there remain questions as to the nature of the USO—does it demand a uniform tariff, for example?

First, it is worth emphasizing that smaller (poorer) economies see lower mail volumes (letters per capita). Countries with a GDP per capita (PPP) of below $1,000 see mail volumes of below 1 per person per year—compared with closer to 100 per person in countries with a GDP per capita of above $5,000 (Table 1).

Table 1: Postal Structure and Development

Indicator	Average for GDP Per Capita (PPP) Band		
	<$1,000	*$1,000-$5,000*	*>$5,000*
Letters/Capita	0.9	4.6	98.4
Total letter volume	10m	634m	2,468m
KM2 per post office	4,702	1,738	458

Source: Calculated from UPU and World Bank data, 2001

The *average* consumer in poorer countries sends perhaps one letter per year—and we know that the great majority will neither send nor receive a single letter (at least not through the network captured by Universal Postal Union (UPU) statistics). In particular, there is little demand from businesses (which account for as much as 80 percent of letters sent) to deliver mail to the poorest in developing countries. This is because most do not have services that require billing (telephony or electricity, as it might be), and they are hardly an attractive target for companies in terms of marketing purposes. Demand from individuals is also likely to be lower –the majority of people in developing countries do not use the postal service for delivery of goods and many – the majority of those living on a dollar a day—are illiterate.

Many people in poor countries do not even live within usable distance of a post office, as is suggested by the fact that, for countries with a GDP per capita of under $1,000, there is only one post office for each 4,700 square kilometers of territory as compared to one office per 458 square kilometers for countries with a GDP per capita of above $5,000. However, it appears that only a very small percentage of the population that does live within walking distance of a post office currently use it even in reformed developing country markets. In Tanzania, for example, an average of about 0.4 percent of the population within the catchment area of a post office visit that office each week (PWC, 2004).[4]

It should be noted that demand for poorly performing incumbent postal services may well be considerably lower than demand for postal content –as suggested by considerable bypass of the incumbent operator, as we shall see. Constraints on demand for services due to inadequate or absent service delivery will be one factor behind low levels of use, then. Nonetheless, the dominant cause for low volumes does not appear to be a mismatch between service and content demand. The primary reason for low volume is that demand for content delivery is strongly related to income—as suggested by the results of both postal reform and extending access.

Under reform, service quality improves, and this tends to increase use of the postal sector. But the usage increase, while impressive, is in the region of perhaps 100 percent, rather than the 10,000 percent differences between low income and high income country usage rates. For

[4] In Malawi, the figure is closer to 0.2 percent.

example, successful postal reform in Tanzania saw mail volumes increase from 0.87 to 1.26 letters per capita per year during 1994-98. This post-reform figure remains only approximately 0.17 percent of US per capita mail volumes. There are considerable limits on the demand for mail services in poor countries even where the mail service provided is of a reasonable quality, then. Regarding extended access, correlations reported later in this paper do not suggest a relationship between the percentage of the population covered by postal service and letter volumes per capita in developing countries—extending network access, like improving network quality, does not apparently uncover significant unmet demand for postal services. If the majority of the population never receives a letter in the poorest countries, as we have seen, and might not even after significant postal reform, the concept of universal service makes little sense.[5]

Overall, there does not appear to be significant demand for universal letter service even if it were to be a financially viable option. If universality *was* achieved using some sort of subsidy mechanism, given the direction of most mail is toward wealthier people and larger businesses, this would constitute a regressive intervention.

On the other hand, post offices can deliver far more than mail. In many developing countries, postal payments represent over 50 percent of total postal revenues, and post offices remain the principal point of access to financial services for the majority of the working population (Walsh, 2001). Many post offices also act as the interface for government-to-citizen interaction such as license payments. Adding together this bundle of services that post offices frequently deliver, governments may well decide that it is vital for the great majority or all of citizens to be able to reach the service delivery point.

But if the goal is universal access to a whole range of services out of which delivery of letter mail is an unimportant component for most citizens, again, a strictly *postal* USO makes little sense. And if we are to look at the USO as a broad commitment to support a whole range of government-to-citizen interactions, perhaps along with financial and other services, the traditional industrialized country model of financing the USO seems inappropriate even if it were workable in developing countries. Can we justify a funding mechanism that forces the urban letter-stamp purchaser to subsidize the transactions costs of a rural applicant for a car license as part of a system that frequently provides substandard letter delivery?

Could a Letter USO Be Supported in Developing Countries under the Monopoly Model?

Even if developing countries desire a monopoly-supported USO model, it appears unlikely to be sustainable in many countries. This section argues that developing countries, with small postal markets, cannot benefit from significant scale economies (which in turn drives up the per-unit cost of letter delivery) and face far more complicated environments in which to deliver mail. These factors combined mean that even a limited USO model supported by monopoly rights would be unsustainable in many low-income countries.

[5] Regarding home delivery, many (most) poor and rural people do not live in households with a recognized address, so they could not receive mail if it were being delivered.

In order for the USO to be sustainable through cross-subsidy from profitable routes to unprofitable ones, there have to be enough profitable routes (and few enough unprofitable ones) to allow for universal service at a reasonable price. The evidence suggests, however, that average per piece costs in developing countries are very high, both due to scale effects but also a large proportion of expensive-to-service rural customers. This suggests that there is not the amount of profitable service at an acceptable price to support the letter USO.

With obvious exceptions such as China and India, absolute mail volumes in poorer countries are very small. Total mail volumes in countries under $1,000 GDP per capita average 10 million pieces, compared to 2.5 billion pieces in countries with a GDP per capita of over $5,000 (Table 1). This suggests that the average LDC will be far less able to benefit from economies of scale. There are fixed-costs associated with mail systems that make low-volume environments high-cost ones as well. Scale economies, due to factors such as automated processing and (more significantly) scale effects in delivery, will be one factor behind a relationship between total mail volumes and letters delivered per employee. Countries that see delivery of fewer than one million letters a year deliver on average below 4,000 letters per employee per year (such countries include Cape Verde, with just over 939,000 letters delivered by a staff of 3,947). This compares to over 60,000 per employee in countries where over 100 million letters are delivered a year (South Africa delivers nearly 2 billion letters using a staff of 74,000, for example). This is a 15-fold productivity difference (Table 2).

Table 2: Cross-country Evidence of Scale Economies in Posts

	Average for Total Letters Delivered Band		
	<1,000,000	*1,000,000 – 100,000,000*	*>100,000,000*
Letters/Employee	3,587	20,693	59,739

Source: Calculated from UPU and World Bank data, 2001

We can further examine the impact of scale economies by looking at estimates based on the United States Postal Service (USPS) on the costs of a US-style service in lower volume environments with lower input costs. The USPS will differ dramatically in terms of automation, route topography, mix of mail, efficiency, and the nature of its customer base—and so the model is only an approximation (made less accurate by a weak proxy for input costs—that of GDP per capita). While Cohen et. al. show that it functions reasonably well in estimating features of rich country postal operations, it is very likely that the adjusted model will become increasingly inaccurate as a guide when looking at low-income postal markets (Cohen et. al. 2003a). It is also worth noting that UPU data suggests a fairly weak relationship between GDP per capita and total costs per letter.[6]

With those caveats, Figure 2 shows what the Cohen study and World Bank data suggests the cost of delivering a letter under United States' USO standards would be in countries with lower mail volumes. As the number of pieces per capita drop below 100 per year, costs rise dramatically

[6] The result will be due at least in part to the facts that labor costs are lower in developing countries and that most developing countries offer a lower quality, extent, and scope of services (not delivery to the door, not six days a week, not fast and reliable, and absent ancillary services such as pension payments).

above 50 cents per piece.[7] This may help to explain why the United States only mandated universal home delivery in 1958, when letter volumes were above 300 per person per year (Campbell, 2004).

Figure 2: Estimated Relationship Between Costs per Letter and Volumes

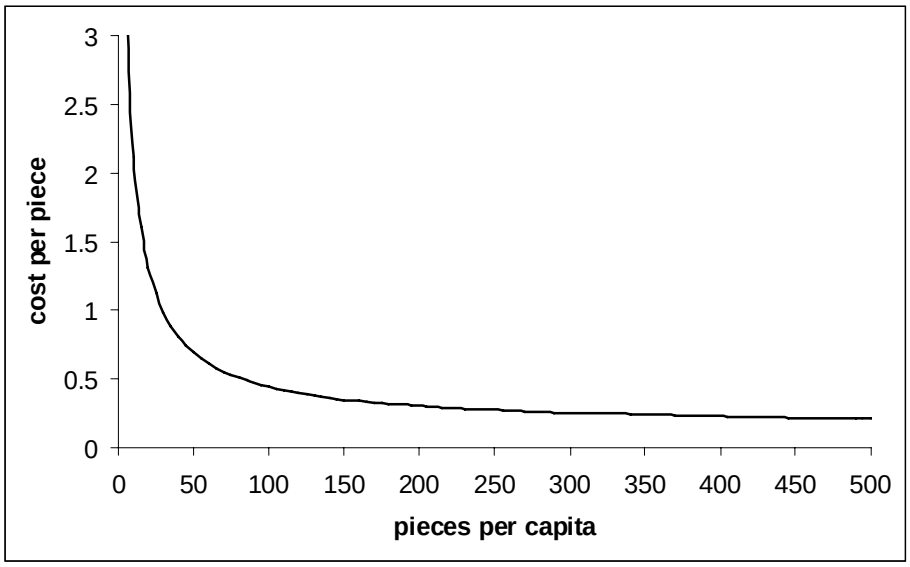


Table 3 suggests the breakdown of costs of US-quality delivery per piece of mail in a system of universal service in an economy where postal volumes per capita are low, based on data from the Cohen et. al. study and the World Bank. As seen, delivery would be expensive—over $0.76 per letter in a country with mail volumes of 10 per capita. Even without delivery to the door, the costs are high—over $0.60 per letter.[8] Again, this data only suggests orders of magnitude, as it is based on United States' postal data adjusting for input costs—and the USPS is an operation in a very different (broadly more positive) environment from most developing countries. Nonetheless, the point is clear that letter delivery becomes considerably more expensive in low-volume environments, not merely because of rising costs of home delivery, but also because the other fixed costs of the network are divided up amongst far fewer stamp purchases. And the reality for a great majority of poor countries is that total mail volumes will be small enough to suggest severe scale diseconomies—mail delivery will be comparatively very expensive to provide to all, let alone the difficult-to-serve.

[7] Cohen et. al. Provide data on prices for US quality USO at United States' input costs for various levels of letter per capita. To adjust (at a high level of approximation) for differing input costs (primarily labor), the author used a regression of GDP PPP per capita on letters/capita to obtain estimates for GDP per capita at various levels of letters/capita. I then multiplied the "unadjusted" Cohen estimates by (predicted GDP)/(United States GDP) in order to get output cost estimates adjusted for input costs.

[8] The procedure to adjust the Cohen et., al. estimates was similar to the above except that GDP per capita at a given level of letters per capita was calculated from a regression of GDP on letters per capita for countries with letters/capita values within 50 percent of those listed in the table (0.5 to 1.5 letters, 2.5 to 7.5 letters and 5 to 15 letters per capita respectively).

Table 3: Estimated Cost Breakdown of USO Services in Low-volume Environments

	Cost of Mail/Piece ($) Pieces/Capita		
	10	5	1
Mail processing	0.06	0.07	0.16
Transportation	0.02	0.03	0.07
Window service	0.08	0.13	0.34
Delivery	0.76	1.19	3.06
Other	0.44	0.69	1.77
Total	**1.36**	**2.11**	**5.40**

Making this problem more acute is the fact that a far greater percentage of people in developing countries are difficult-to-serve rural customers—69 percent in low income countries (World Bank, 2002). Income density—an important measure of "demand for postal services per square kilometer"—is far lower in developing countries than rich ones—$39,000 per square kilometer in Sub-Saharan Africa as compared to $658,000 in high income countries, for example (Kenny, 2002). Both of these factors suggest that even less stringent USO may cost more to meet in poor countries than they would in rich ones.

There is significant variation in all of these numbers—some postal operations are more efficient than others, and deliver more mail at the same level of GDP than others. As we have seen, postal performance (in terms of letters per capita) is correlated with greater operational efficiency (measured by letters per staff, for example) and trust in the postal network (itself reflecting quality of service). At the same time, some developing countries have very large, very dense postal markets where delivery is far more straightforward.

Nonetheless, the point remains that, in most cases, even less stringent USOs would be more expensive per letter than similar obligations in the developed world, while the profitable market that might provide cross-subsidy is far smaller, because of the lower level of urban development and large corporate customers. Even in some of the richer, most population-dense, urbanized developing countries about 90 percent of routes are loss-making.[9] This situation would be worse in countries where only 31 percent of the population were urban (the case in low income countries). The cost and complexity of service delivery, especially in small markets, will help account for the fact that post offices frequently make significant losses in the developing world. Forty-five percent of countries with GDP per capita under $5,000 see revenues below operating expenses (let alone total costs).[10] UPU data suggests that 42 postal incumbents had negative net revenues in 2003, totaling nearly half a billion US dollars. In Nigeria, annual losses are above 0.05 percent of GDP.

Putting revenues and indicators of costs together suggests the scale of the problem. Low income countries will average total postal volumes lower than 10 million pieces a year. Imagine a

[9] Traffic is measured by revenues, in this case. British Postal Consultancy Service (2002)

[10] Raising prices to the levels suggested by the Cohen et. al. (2003a) study would be an unworkable solution—this would doubtless reduce demand in favor of alternate providers, thereby further raising per-unit costs.

national stamp price of $0.12.[11] National stamp revenues will bring in perhaps $1 million per year. This to support delivery to a population that is 69 percent rural and on average receives less than one piece of mail per year.

The price of delivery and the related costs of USOs can be significantly reduced from the hypothetical levels of Table 3, if the USO is realistically defined. In the United States, mail that is nondelivered (i.e., is picked up at post offices) accounts for 21 percent of volume and 67 percent of profits. In Italy, similar numbers are 14 and 42 percent. In other words, avoiding home-delivery dramatically reduces costs even in high-density environments such as in the United States (Cohen et. al. 2003a). Abandoning home delivery for a post office box system (the *de jure* case in many developing countries, the *de facto* case in the majority) will greatly reduce costs. This has been done in Senegal, for example, where home delivery carries an extra charge.

Of course, stamp prices should also be set closer to costs of delivery –in Sub-Saharan Africa, for example, average postal expenses per letter are approximately $0.54. Even allowing for marginal cost savings due to reform, this suggests the need for rate increases. Asymmetric charging can also help raise revenues for rural access. Historically, differential charges applied in developed markets—with the postal service in 17th century England charging four times as much to deliver a letter from London to Scotland than within London (Ogilvie, 1893).[12] Furthermore, "universal service" does not have to mean uniform service. In Tanzania, the quality of service is lower in rural areas, with service only provided to post offices, and at D+4 rather than D+1. Again, in Costa Rica, the target is D+2 for urban and D+4 for rural.

Nonetheless, even differential service targets—as part of the USO—are unlikely to reduce costs to allow for a sustainable universal service, to be provided at a reasonable stamp price, on the back of the few profitable urban routes in low income countries. And so monopoly provision, even if efficiently run, would not garner the profits large enough to come close to true universal service provision. Experience supports this conclusion. In the developing world, many post offices are making a significant loss. Nonetheless, these post offices are not delivering on universal service obligations. Indeed, so inefficient is the model in most LDCs that there is no relationship between the size of government subsidy and postal performance in terms of letters per capita or service coverage suggested by the correlations presented later in the paper. If subsidies were extending access, countries where revenues were considerably smaller than expenditure (and so countries where subsidies were large) would see a larger number of letters per capita, a lower ratio of square kilometers to offices, a higher number of offices per capita, or a lower unserved population. None of these results hold.[13]

[11] Trinidad and Tobago's price after rate increases.

[12] The United States only introduced one-price delivery in 1885 (Campbell, 2004). It is worth noting that in both the United Kingdom and the United States, the postal monopoly far pre-dates one-price delivery and universal service obligations, suggesting that the justificatory link between the three developed ex-post.

[13] The weak correlation between urbanization and receipts/expenditure suggests that it is not the case that subsidies are going to deliver the same level of service in countries where delivery is more complex.

Against the Legal Monopoly

The two arguments for monopoly provision in the postal sector are first, that the sector is a natural monopoly and second, that the monopoly allows for cross-subsidy of services and so meeting USO targets.

The first argument is not a good argument, even in theory, for enforcing a *de jure* monopoly. There are some reasons to believe that mail delivery services may be "natural monopolies". Mail delivery involves a network, and network externalities suggest that one big network serving a given area will, other things being equal, be more efficient than many overlapping networks providing the same service. In other words, if you leave a competitive postal market alone, it is likely that one competitor will eventually win out to control all, or nearly all, of the market.[14] But this is no justification for legally enforcing that market from the start. Quite the opposite. It is a reason to regulate the market so that a monopolist cannot take advantage of its position to squash competition and over-charge consumers for services.

Furthermore, the "natural monopoly" characteristic of posts, especially in developing countries, may be oversold. We don't need to go too far from basic posts to see that competition can work even in "networked postal" industries in developing countries—DHL, FedEx, and UPS demonstrate that competition can flourish where obligations are few and prices can reflect costs. And in a developing country environment where total postal volumes are frequently too small to garner significant scale economies, the disadvantages of market fragmentation are reduced. Some evidence for this is that in many developing countries, a number of large postal users legally or illegally bypass postal incumbents to provide their own services (in Jordan, legal competitive operators provide services to deliver bills despite serious handicapping, for example).[15]

The widespread bypassing of incumbent postal providers in developing countries suggests that, whatever the advantages to scale, the inefficiency of monopoly government provision frequently outweighs them. Monopolies are likely to be less efficient and less innovative than competitive environments because the usual incentive to innovation and efficiency (the fear of losing customers to the competition) is not there. When the monopoly in question is operated by the government, the "theoretical" problem becomes even more acute. There is not even the incentive to maximize the quality and efficiency of services at a given cost in order to maximize profits.

Not only are staffing levels frequently very high, but pricing structures suggest that the post office may even be losing money delivering to what should be their more profitable urban and corporate customers. A monopoly will only produce revenues to fund the obligation if prices, somewhere, are higher than costs. Given under-pricing and inefficiency of many government-

[14] This appears to be the case in a number of developed markets where competition has been introduced—for example, New Zealand and Sweden.

[15] Many developing countries with weak or non-existent regulatory structures nonetheless see more competition than developed countries with aggressively pro-competitive regulators such as the United Kingdom (where Royal Mail still has a 99.75 percent market share). It should be noted that the presence of *de facto* competition, almost certainly based on quality rather than price, suggests that an incumbent that improved the quality of service delivery in response to *de jure* competition might actually see a growing market share even if it were to raise its prices.

controlled postal monopolies, this may be a questionable assumption. Furthermore, service standards remain low—as suggested by the low level of trust in many postal operators. In response to the question "do you trust your country's postal system sufficiently to have a friend mail a small package worth $100 to you?" the average survey respondent in Nigeria scored the post office 1.7 on a scale of one (no trust at all) to seven (complete trust) (Kirkman et. al. 2002). In these cases, not only is an enforced monopoly failing to deliver on the promises of the USO, but by stifling competition, it is forcing people who use the post to use an inefficient and unreliable service provider. For little or no benefit to the rural poor, the monopoly penalizes the corporate and urban user.

The practical example of the benefits of competition over monopoly in a poor developing country is Tanzania, where during a process of liberalization, total mail volume increased from 0.87 letters/capita/year to 1.26 between 1994 and 1998 as we have seen, while the postal company moved from loss to profit, and the number of post offices increased. Prices did rise closer to costs, but consumers were clearly willing to pay higher prices for a higher quality of services.

The second argument for monopoly is that if it were removed in a system of one-price national mail delivery, competitors unburdened by a USO would serve those routes that cost less to service than the price of a stamp. Once competitors had "skimmed the cream" from these routes, the USO provider would be left serving only (or mainly) routes that were unprofitable at the current stamp price, leading to significant losses.

The cross-subsidy under monopoly model is a terribly inefficient way to support access targets, however. The small number of large urban customers posting mail in urban areas will have to be heavily taxed (by paying stamp prices far above the cost to deliver their mail) to meet the service requirements of the majority of rural users. And theory suggests it is the worst type of tax, in that its very specific—operating on mail services only (theory suggest broad taxes—like the income tax—are more efficient because they distort the market less). Heavily taxing the large urban customer also encourages substitution, which depresses the volume of the very traffic used to fund the USO. Furthermore, the sector looses the benefit of competition (greater efficiency, more innovation) in a market that accounts for some major part of the traffic.

The monopoly is also a suboptimal way of "compensating" the operator because there is no necessary connection with the cost of providing the USO. In rich countries, the value of the monopoly will be too much—in New Zealand for example, the incumbent is providing USO services without monopoly and at no additional cost to the government. As we have seen, in poor countries, any potential profits from a monopoly on urban routes is likely to be far too little to meet any meaningful definition of universal service. A link between the value of the monopoly and the cost of universal service can be made in countries where the monopoly is "worth too much" through regulation of pricing for monopoly services. However, in countries with few profitable routes, it is doubtful that the monopoly profit-maximizing price structure would generate sufficient revenues to fund the USO, rendering pricing regulation irrelevant to

meet this goal.[16] The justification for the monopoly is not practicable, the results of the monopoly are poor-quality services and low use.[17]

It should be noted that the monopoly USO model *can* work. Trinidad and Tobago has increased household delivery to approximately 95 percent of population under the model, for example, as part of a broader reform effort that saw postal volumes and revenues approximately double, and quality of service and consumer satisfaction increase.[18] But even in a wealthier developing country, where the postal monopoly is delivering a comparatively efficient cost-related service and where the monopoly-funding-USO model may plausibly raise sufficient funds to support rural access, it is still far from the best way of extending access.

What Drives Postal Performance?

While postal incumbents in most developing countries may be unable to provide universal service, they can still provide better service. Supply and demand factors will both play a role in determining the number of letters sent per capita. On the demand side, income is clearly an important factor. Perhaps literacy levels might also play a role. On the supply side, one might plausibly expect price, extent, efficiency, and quality of service to have an impact—indeed, such relationships have been found in developed country postal services (Nankervis et. al., 1999). It is also possible that a post office network offering a range of ancillary services and/or services aimed at the needs of businesses would attract a larger clientele that might post more letters.

To examine these questions, we have chosen to use a dataset that covers as many countries as possible. As a result, and as we shall see, data limitations force the use of proxy or imperfect indicators. Furthermore, we do not have cross-country comparable data on price. We do have various measures of extent (measures of population covered and post offices per square kilometer), efficiency, and quality of services, however.

Efficiency variables include ratio of revenues to expenditures, postal revenues per staff, and letters delivered per employee and post office. Looking at potential determinants of efficiency, the general level of development may allow for economies of scale or more efficient postal institutions. Urban postal delivery is more straightforward than rural delivery, as we have seen, and so heavily urbanized economies will be at an advantage. Private competitive involvement has been found to correlate with improved service delivery (including reduced prices) in a number of sectors, and this includes studies of the postal sector in developed markets (Frontier Economics, 2002). All of these factors may impact overall efficiency.

[16] Furthermore, such efforts appear fraught with computational difficulties in practice and require far more market intelligence than most developing country regulators (where there are such regulators) possess (see Andress, 2004)

[17] Again, the history of the British postal network may provide a suggestive example here—enforcement of the postal monopoly by Charles I was one of many grievances of Parliament that led to the English Civil War (Ogilvie, 1893). In 16th century Britain, the monopoly was used to "farm" profits, whereas today in many developing countries it has some role as a source of government employment. In both cases, however, it is likely that the disadvantage to the consumer is greater than the advantage to the monopoly beneficiary.

[18] Walsh, 2001 and comments by Juan Ianni. From 1999 to 2003 delivery times fell from one week to nearly all mail by D+2, volumes rose 133 percent, revenues 75 percent, and a consumer satisfaction index went from 50 percent to approximately 85 percent.

*"*Quality*"* is, at the outset, a comparatively arbitrary term. In previous postal studies it has been measured using indicators such as number of letters delivered on time. It may also encompass the linked concept of reliability—are letters delivered at all? Again, we do not have such data at the cross-country level. Instead, we use a measure of trust in the postal system (survey answers to a question regarding willingness to send an object worth $100 through the posts) as a proxy for quality. This trust measure might plausibly be related to measures of efficiency—bloated public monopolies frequently provide a lower quality of service than efficient ones (World Bank, 1995). Trust, and a broad definition of *"quality"* might also be related to the extent of service provision.

In order to empirically examine our posited relationships, a range of relevant variables were selected from the UPU database as well as information from Kirkman et. al. (2002), and the World Bank's *World Development Indicators* database. These are described in Table 4, with descriptive statistics in Table 5.[19] There is considerable variation across countries in most of the indicators—for example, the number of letters delivered per year per employee varies from 196 to 174,930, receipts as a percentage of post office expenditures varies from 11 percent to over 400 percent, privately operated post offices as a percentage of all offices varies from none to 95 percent and the average geographic coverage of post offices varies from less than one square kilometer to nearly 30,000 km^2.

[19] It should be pointed out that much of the data is subject to significant error. For example, the UPU collects its data from the incumbent postal operator and it has limited capacity to check the reliability of this information. Further, while such operators usually have an official monopoly over at least parts of the postal delivery system, especially in developing countries with weak operators, much mail is delivered by unofficial operators—which is not captured in the statistics. The trust index could reflect trust in express or highly guaranteed mail services rather than the country's core mail service.

Table 4: Indicators for Analysis

Postal index	Index of postal success calculated as (log) actual minus (log) predicted letters/capita from regression of log letters/capita against log GDP/capita (PPP). Letters/Capita from UPU, GDP/Capita from WDI.
GIT Postal trust	Score on GIT index of 'trust on postal services' (survey response to question: 'Do you trust your country's postal system sufficiently to have a friend mail a small package worth $100 to you (1=not at all 7= yes)'). Source Kirkman et. al. (2002)
Illiteracy	Illiteracy rate, adult total (percentage of people ages 15 and above). Source: World Bank, 2002.
Urban population	Urban population (percentage of total). Source: WDI.
Savings and giro	Number of post office savings and giro accounts per 1,000 people. Source: constructed from data in UPU.
Money orders	Number of money orders, domestic service per 1000 people. Source: constructed from data in UPU.
Letters/staff	Letters/staff. Source: constructed from data in UPU.
Receipts/Expenditure	Postal receipts/Postal operating expenditure. Source: constructed from data in UPU.
KM/Office	Average area covered by a permanent post office (km2). Source: UPU.
% of Offices staffed private	Secondary offices staffed by nonadministration as a percentage of total offices. Source: constructed from data in UPU.
Expenses/Letter	Postal operating expenses/letter (SDRs). Source: constructed from data in UPU.
Receipts/Staff	Postal receipts/staff (SDRs). Source: constructed from data in UPU.
Offices/Population	Post offices/population (1,000). Source: constructed from data in UPU.
Staff/Office	Total postal staff/post offices. Source: constructed from data in UPU.
Population unserved	Percentage of the population without postal delivery, 2000. Source: UPU.
GDP/Capita	GDP/Capita, PPP. Source: WDI.

Table 5: Descriptive Statistics

	Number of Obs	Average	Standard Deviation	Minimum	Maximum
Postal index	110	0.00	1.26	-3.39	3.22
GIT Postal trust	51	4.36	1.50	1.80	6.70
Illiteracy	87	20.97	20.93	0.20	84.07
Urban population	110	54.30	22.68	9	100
Savings and giro	41	177	286	0.20	1574
Money orders	88	347	1096	0.02	7322
Letters/Staff	105	31,830	38532	196	174930
Receipts/Expenditure	103	1.07	0.50	0.11	4.73
KM/Office	106	1,491	4358	0.80	29182
% of Offices staffed private	106	29	30	0.00	95
Expenses/Letter	103	2.07	13.96	0.001	142
Receipts/Staff	101	13,288	21900	58.84	132579
Offices/Population	106	0.16	0.18	0.00	1.32
Staff/Office	101	7.73	7.60	0.54	57.44
Population Unserved	94	7.74	18.89	0.00	97.00
GDP/Capita	110	8,389	8720	523	50061

Table 6 reports regional average statistics, suggesting considerable variation even at this aggregate level. Letters per capita at this level vary between nine and 224, expenses per letter from $0.47 to $1.92, and the trust score from three to six. Much of this variation would be predicted based purely on income differences between regions. The remainder of this paper discusses if other factors are also at work.

Table 6: Regional Statistics of Selected Variables

	GDP/capita (PPP value) ($)	Letters / capita	Expenses / Letter ($)	Trust	Population Served (%)
Asia Pacific	6,106	28.0	0.474	4.38	97
Europe and CIS/ECA	8,030	38.8	0.672	4.70	99.7
LAC	7,017	17.5	0.702	3.03	93
Arab/MNA	4,275	8.3	1.92	4.70	85.7
Sub-Saharan Africa	2,750	9.1	0.537[20]	3.47	76.8
Industrialized countries	25,191	224.0	0.57	6.02	99.5

A first stage in the empirical analysis is to look at simple correlations between variables. To do this, we construct a relative measure of postal performance based on the "postal Jipp curve." This is the (log) actual letters per capita posted in a country minus the (log) predicted number of letters posted in a country based on what would be expected given the country's income. Broadly, a positive number suggests that the country is posting more letters than we would expect based on income, a negative number means people are using the (official) postal system less than expected (for example, the 2000 score for Algeria is 0.99, Morocco 0.87, Trinidad.24, Tanzania 1.82 and for Senegal –0.11).

We can now study a correlation matrix based on this data. The numbers in the matrix (Table 7) suggest the degree to which one indicator varies in step with another. If there is no relationship between changes in one indicator and the other, the score in the matrix would be zero. If an increase or decrease across observations in one indicator is perfectly matched with an increase or decrease in the other indicator, the score in the matrix would be one. If an increase in one indicator is perfectly matched by a decrease in the other (and vice-versa), the score in the matrix would be –1. Strong positive or negative correlation scores (greater than 0.5 or less than –0.5) are highlighted.

[20] Excluding Angola where the expenses/letter was $142 which may distort the average for the region.

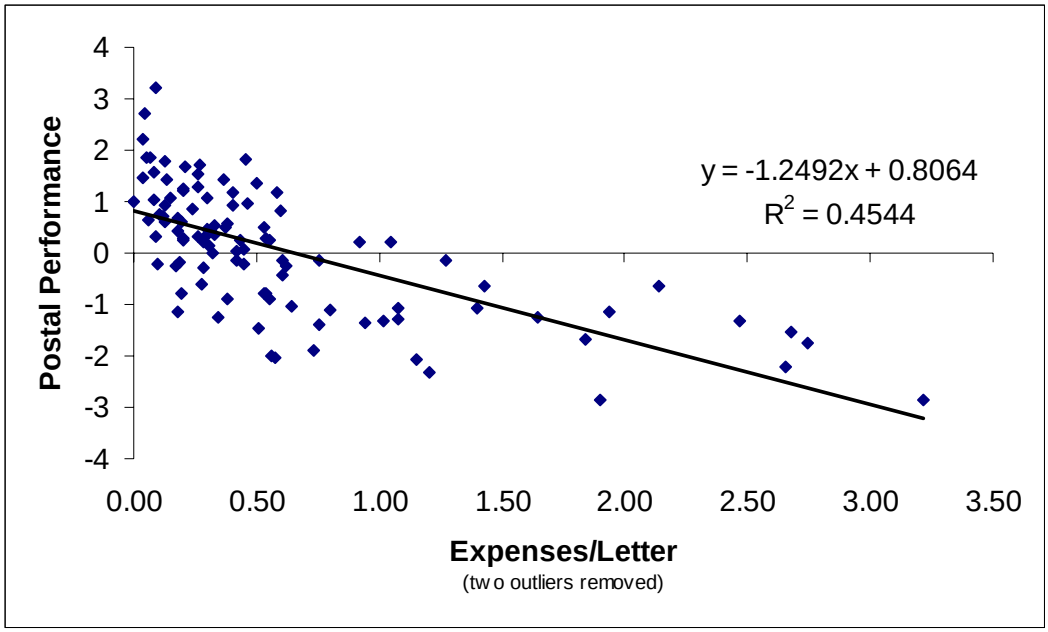
Table 7: Correlation Matrix

	GIT Postal Trust	Illiteracy	Urban Population	Savings and Giro	Money orders	Letters/staff	Receipts/Expenditure	KM/Office	% Offices Staffed Private	Expenses/Letter	Receipts/Staff	Offices/Population	Staff/Office	Population Unserved	GDP/Capita
Postal index	0.55	0.13	-0.19	0.00	0.17	0.35	-0.01	-0.10	0.18	-0.30	-0.10	0.10	0.13	0.07	0.08
GIT Postal trust		-0.22	0.36	0.51	0.32	0.72	0.34	-0.33	-0.01	-0.24	0.65	0.48	0.46	-0.43	0.81
Illiteracy			-0.60	-0.39	-0.21	-0.28	0.06	0.42	0.02	0.15	-0.33	-0.43	-0.12	0.43	-0.56
Urban population				0.36	0.14	0.43	-0.07	-0.26	0.02	-0.09	0.40	0.21	0.37	-0.41	0.62
Savings and giro					0.10	0.50	0.05	-0.16	-0.22	-0.03	0.83	0.29	0.19	-0.22	0.53
Money orders						0.09	0.05	-0.10	-0.16	-0.04	0.04	0.17	0.20	-0.11	0.24
Letters/Staff							-0.02	-0.12	0.15	-0.10	0.56	0.03	0.46	-0.15	0.66
Receipts/Expenditure								-0.02	-0.01	0.05	0.04	0.11	-0.03	-0.04	-0.02
KM/Office									-0.16	0.60	0.13	-0.25	0.09	0.08	-0.22
% of Offices staffed private										-0.07	-0.01	0.21	-0.31	0.04	-0.02
Expenses/Letter											0.50	-0.10	0.14	-0.02	-0.08
Receipts/Staff												0.03	0.39	-0.19	0.60
Offices/Population													-0.11	-0.27	0.37
Staff/Office														-0.12	0.50
Population unserved															-0.30

We can use the postal index score (letters per capita performance allowing for income) for 2000 to see what correlates with "better than expected" postal performance. Looking across the first row of the correlation matrix, it is possible to see how closely our index of postal performance is related to the other indicators in our database. In short, the postal index appears to be strongly and positively correlated with our measure of trust in the postal system and the number of letters per employee, and strongly negatively correlated with total postal expenditure divided by the number of letters delivered.[21]

Both postal expenses per letter and letters delivered per postal staff member are strongly correlated with postal performance—lower costs and fewer staff per letter are correlated with more letters sent at a given income (see Figure 3).

Figure 3.



Causation runs in both directions. High fixed-costs mean that factors that increase volumes will improve efficiency, while improved efficiency and quality will also increase the demand for mail services. Trust in the postal network is also a significant correlate with postal performance—countries with low trust in the postal system (a score of below 4 out of 7) average postal performance of -0.59, compared to countries with high trust (above 4) that average 0.51.

[21] It is important to remember that this is a measure of postal performance *given income*—if the measure used was letter per capita, it would be strongly correlated with any indicator that was also related to income per capita (including, for example, urbanization). It should also be noted that letter/capita and expenditures/letter are all arithmetically linked by the inclusion of letter volume.

Like efficiency, postal trust is correlated with income, suggesting that it may be difficult for developing countries to greatly increase trust in the postal network. For those countries that do manage to improve trust, however (perhaps through institutional reform), the payoff may be high. One possible avenue suggested by the strong positive correlation between letters/staff and trust, is to reduce over-staffing in the postal network. It is worth noting that it appears efficiency and high quality of service are *positively* related. Countries with low postal efficiency in the postal system (an index of below 0) average a trust score of 3.62, compared to countries with high efficiency index (above 0) which average 4.97. In other words, at least at first examination, there does not appear to be a necessary efficiency-quality trade-off—instead, it is possible that greater efficiency can drive improvements in both variables.[22]

Regarding the impact of incumbent reform on efficiency and letters per capita, countries where no secondary post office is staffed by people outside the postal administration score an average of -0.43 on the performance index, while those with at least one such office score an average of 0.17. Having said that, the link appears statistically weak. There are at least two possible reasons for these results. There are significant data weaknesses. The measure of "percentage of offices that are privately staffed" is also only a crude and partial indicator of sector reform.[23] Second, it may be that the indicator does not capture what is important as part of a successful reform agenda. The case studies in Walsh (2001) covering Argentina, Tanzania, and Trinidad and Tobago suggest that privatization without successful regulation (Argentina) can produce worse results than corporatization and various types of management contract (Tanzania and Trinidad and Tobago). An important factor behind increasing the letter flow of the incumbent captured in UPU statistics may be better management at the top of the incumbent itself—ill captured by our measure of reform.

A New Model

At the moment in many countries the "postal sector" is seen as coterminous with the post office. It may be more constructive to view letter and parcel delivery as the "postal sector". Some proportion of letters and parcels in developing countries are delivered via the post office, which is one service provider in the postal sector. The post office frequently also provides services in other sectors, including the financial and government services sectors.[24]

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[22] Alex Dieke (in correspondence with the author) notes a similar phenomenon occurred in Europe in the 1990s, where TPG and Deutsche Post both saw improved routing times and reduced costs and employment.

[23] Use of another measure of "reform"—countries with a World Bank project listed in the Bank's postal projects database which began before 2000, that had a policy/regulatory reform component—suggests that project countries see slightly above average performance on the performance index. However, the result is not statistically significant and is based on only eight countries that fit the criteria (Gabon, Guatemala, Guinea Bissau, Morocco, Tanzania, Togo, and Trinidad and Tobago).

[24] The correlation matrix does not appear to suggest a particularly strong link between the level of postal financial services used by the population and basic postal performance. Nonetheless, suggestive correlations do appear. Savings and giro accounts per capita is strongly correlated with receipts per employee (unlike the postal index itself), suggesting that the postal financial network may play an important role in creating income for the postal network and reflecting, perhaps, the greater importance to many post office customers of financial services provided through the postal network than letter services.

It is important to make these distinctions because postal policy and regulation should be primarily involved with improving the performance of the postal sector, not the post office. Conversely, the post office frequently has roles in other sectors—it may be a vehicle for the delivery of a range of government services, for example. Ensuring the effective delivery of this wider range of services is the concern of many parts of government—the financial regulator for banking services, for example, or the transport department if the post office is involved in vehicle license issuance and delivery. Suggesting that postal policy and regulation should be about improved postal sector performance, and understanding that the post office's current and potential role spans many sectors, may help to clarify the roles and objectives for different parts of government and for the post office itself, allowing for a new model of both postal and government services delivery.

Whatever is decided about the services provided to every citizen, in the poorest countries the monopoly-supported USO for letter delivery is likely to be unworkable and damaging to consumers of postal services. The first two steps on a path to postal sector reform should be to abandon the monopoly and seriously reconsider the postal USO.

What would be a sustainable model to replace the monopoly, postal specific USO? There is some evidence in developing countries that increased private sector involvement in the incumbent as part of a broader process of reform covering issues such as staffing, tariffs, competition, and regulation may be of help. There should be no monopoly for *any* provision of postal services. However, either general competition laws or postal-specific regulatory instruments should ensure fair competition through (for example) the enforcement of termination agreements. Building such capacity should be an early element of the reform process. Regulation of financial and other services provided would, naturally, fall under the purview of the suitable sector regulator.

Looking at universal service requirements, using taxes on operators may not be plausible in the poorest countries—there aren't likely to be enough postal and logistics profits to tax to meet the costs of universal service schemes[25]—but it may be a second-best solution for upper middle-income countries like Trinidad and Tobago, assuming it does not discriminate against certain types of operators. Regardless, the issue of "universal service" is one that should be tackled—in a broader context than the postal sector alone—and should almost certainly involve subsidies based on a broader tax-base.

In many countries, the most important social function of the post office is not as a letter delivery mechanism, but in delivery of pensions, financial services, or other activities. Under those circumstances, what users most want is "universal access" to those services, not necessarily to letter delivery. At the same time, there are clear economies of scope in siting services together in one location.

Governments provide or support a number of services that do, or it is felt should, reach the great majority of citizens—from primary education and basic health care to access to polling places, registrations, and (perhaps) postal services. Some of these services can be provided "stand-

[25] Taking China as an example, a 2 percent tax on the air express market would raise perhaps $30 million while costs of the USO can be conservatively estimated at $340 million (Andress, 2004).

alone," others would benefit significantly from economies of scope. A first step towards a coherent "universal service" strategy would be to decide on a list of services that governments believe should, and feasibly can, be provided to the great majority of citizenry and then look for opportunities to "bundle" those services.

"Bundling" is the idea behind postal financial services, the telecenter, and a number of other institutions with a mixed track record. This is perhaps not the fault of the concept, but of its implementation—perhaps the wrong provider or the wrong services provided. These failures do suggest the importance of a community-driven exercise in choosing services and an entrepreneurial (sustainable) model for providing them, however.

How would we get from here to there? A five-step program might be:

(a) Abandon the monopoly. It doesn't help, and it isn't enforced.
(b) Carry out basic management and financial reform of the post office—restaffing, a management contract, returning to financial stability and setting up transparent accounting systems. At the same time, reform and separate the postal financial system.
(c) Ensure the possibility of fair competition in mail delivery as part of a postal policy and legal reform process This may be possible by applying existing competition law and enforcement to postal operators or may require specific regulatory institutional structures to oversee the postal sector.[26]
(d) Develop a method to greatly increase private sector involvement in both the retail and delivery portions of current postal operations—perhaps including retail franchising, and sale of the public operator's network delivery functions.
(e) As part of a participatory process, agree the scope of bundled "universal" services to be offered by postal retail outlets (starting at a level that is minimal, implementable and sustainable), the number and approximate geographic location of the outlets needed to meet USO goals, and a method to select the delivery mechanism(s) for these services.

One possible model that would require considerable development to be an implementable, practical solution might involve a system where there is a private franchise operated by a local entrepreneur that provides communications and services in every town or village with more than a minimum sustainable number of people. Services may include basic finance, post office boxes (for those that want them) and postal collection, licenses, registrations and pensions. The government, as part of a participatory process, would set certain minimum services and standards that must be provided by the franchise. In addition, the franchisee would provide any other services it chose. The franchises (one per town or village) are auctioned to the highest bidder or, if no one will pay, a subsidy auction is used. Most services apart from government-to-citizen business are offered at prices that reflect costs. These prices would be regulated if the service provided is an effective monopoly. A private company provides (comparatively infrequent, regular, sustainable) physical collection and delivery to the franchises, picking up mail from a set number of interconnection points. This company is also selected competitively, and it receives a regulated (cost-based) amount per item delivered to or taken from the franchise plus (if required) an up-front subsidy. The company and franchises would have to provide letter delivery between

[26] Given that there appears to be *de facto* competition for postal services in many developing countries already, despite the hurdles presented by a *de jure* monopoly, the need for considerable regulatory capacity may be limited.

post franchises at one price nationwide. The company is free to provide other postal services, but has no monopoly on service delivery.

Of course, this company could be the reformed incumbent provider, but only after a considerable process of restructuring. We have seen that lowering costs and staffing can improve efficiency, and these might be priorities for the reform agenda.

Conclusion

Again, it is important to make the point that this paper has been based largely on generalities and averages. There will be developing countries where a monopoly-enforced cross-subsidy model is providing services of value to the rural poor and where they are doing so at some reasonable level of efficiency. Even if they may benefit from reform, the transition involved for such cases will have to be carefully designed to ensure the continuation of services. Furthermore, the record to date of reform is patchy, suggesting we have more to learn about how to operationalize the competitive model.

Nonetheless, it is likely that moving from an unworkable monopoly model designed to deliver a service in low demand, to a functioning competitive model that delivers a range of services that poor people find important and that might have a dramatic impact on quality of life, could be done at little cost in many developing countries. Even taking just the first steps of abandoning the monopoly postal USO would be significant progress.

As a final note, it should be pointed out that abandoning a letter-post USO would pose a challenge for countries in their relations with the UPU. The UPU Letter Manual states that "*…in order to support the concept of the single postal territory of the Union, member countries shall ensure that all users/customers enjoy the right to a universal postal service involving the permanent provision of quality basic postal services at all points in their territory, at affordable prices.*" (UPU, 2001). Perhaps it is fair to say that this obligation was only introduced in the 1990s and has since been met more in the spirit than in the letter in many developing countries.

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